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The University of Toronto Medical Journal

(AN UNDERGRADUATE PUBLICATION)

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Editorial

PERSONALITY IN MEDICINE.

Everyone recognizes that Personality is important in medicine. And yet we are convinced that in medical education not enough stress is placed upon it. Too much emphasis is laid upon the attainment of an extensive knowledge of cold facts and too little attention is paid to the development of a pleasing Personality. Of course "Personality Training" is not something that can be taught, except by example. It is something which each must develop within himself. We feel that we will be performing a useful service if we remind medical students of the importance of cultivating Personality and indicate some of the ways in which this may be accomplished.

To begin with, we must attempt to define Personality. Naturally that is difficult to do. Perhaps we can indicate our conception of it if we say that Personality is the summation of those factors about an individual which make him attractive to other individuals. To make it clearer, think if you can, of someone whom you are always glad to meet and whom having met, never fails to make you feel that life is a little bet-

ter than it seemed before. That individual has Personality.

Surely the value, or rather the necessity, of Personality in medical practice is obvious. To begin with it will help you to get through your undergraduate training. In the earlier years it will bring you close friendships with your fellow-students. Making friends is the first lesson in Personality Training and you will rate 100 per cent. in Personality only when you have learned to act in such a way that every acquaintance calls you friend. In the clinical years you will find an ounce of Personality far more valuable than a pound of knowledge. It will win for you the admiration of your clinicians, the coöperation of the nurses (even Supervisors!) and above all, the confidence of the unfortunate patients who must submit to being quizzed and poked and pummelled and squeezed to no obvious advantage. It is easy to "get along" with patients if you treat them kindly and gently. Remember that they are human just as you are. Show a real concern in their being ill and lend a patient and sympathetic ear to their story of troubles both physical and mental. Be cheerful and tactful and act as though you credited them with at least average intelligence. If you do all these things naturally, as an expression of your Personality, then you will find your patients smiling instead of hiding under the covers as they see you coming down the ward.

And when you graduate, how necessary is Personality! Ask yourself, of what value will be all your hard-won knowledge, if prospective patients on contemplating you are repelled rather than attracted to your office door. And if they do come and you treat only their bodies and not their souls, how great will be your success? There never was a disease cured by the administration of drugs or by surgical operation alone. More than that is necessary. The doctor must inspire confidence in his patients so that they will believe in the efficiency of his remedies. He must be the trusted friend on whom they can rest the burdens of their troubled spirits. After all, nine-tenths of patients need psychotherapy more than they need medicine, and what is psychotherapy but kindliness and sympathy and common-sense advice? And to make it effective the doctor must exemplify through his own Personality the worth-whileness of a better life.

With these ends in view it is our contention that medical students should constantly strive to develop within themselves those attributes which will make their Personalities attractive. Some of these,—kindness, gentleness, sympathy, patience, cheerfulness, tact, and trustworthiness,—have been referred to already. They and others are inseparably associated with the concept of a "Gentleman." Some discerning mind has defined a Gentleman as "one who never consciously hurts the feelings of another person." Strive to live up to that definition and you will be a better doctor than you ever thought your ability deserved.

Another aspect of Personality that we would like to stress is a good appearance. For that, expensive clothes and beauty of face or figure are useful accessories, but not essential. Far more important are cleanliness and neatness. Shoes shined, hair parted, trousers pressed, and hands spotless,—what a difference these can make in any man! Remember, first impressions count, and they are usually visual impressions.

Self-confidence is important in Personality. Do you but believe in your own ability and those who come to you for aid will sense that you can help them. Confidence comes with knowledge. But there is another factor, and that is the experience of working out problems for yourself. Do not be too anxious to copy someone else's work. Struggle through it yourself and you will be rewarded by the conviction that you can rely on your own ability.

The art of conversation is a valuable asset to any man. Dale Carnegie gives away the secret in his book, "How to Win Friends and Influence People."

Find out what the other fellow is interested in, ask a few leading questions, and then let him do the talking. It is a good theory and it works. Of course there are other methods of improving your conversational ability. Have a few interests outside the narrow field of medicine. Do not confine your reading to text-books. Browse through the newspapers once a day and enjoy a good book occasionally. Be able to discuss intelligently the topics of the day. Incidentally we would like to make a plea at this time for the more widespread use of the "King's English." It is extremely gratifying to listen to someone who observes at least the elementary rules of grammar and who speaks clearly so that listening to him is not a constant strain upon the auditory apparatus. It is unfortunate that many medical students tend to be careless in this regard.

Finally may we advocate a sense of humour? We are not referring to the wit which makes a play on every spoken word and supplies a hackneyed epigram for every occasion. Rather do we mean the ability to be happy about life in general, take reverses with a smile, and see the funny side of other people's humour. It really is a saving grace.

Of course there are many other aspects of Personality that we have not mentioned. But we are well content if we have succeeded in arousing even a little conscious interest in this important aspect of medical education.

R.A.M.

AN EXPLANATION TO THE JUNIOR YEARS.

A number of first and second year men will be wondering why they receive this Journal which has contained so few articles of interest to them. It is hoped that these few words will clarify the situation.

In the first place it should be pointed out that the Editorial Board is well aware of the predominance of clinical topics in issues thus far. Articles on pre-clinical subjects have always been difficult to obtain for the field is limited and junior men have ever been backward in submitting material for publication. These difficulties were anticipated this year and several excellent pre-clinical topics were chosen. It is unfortunate that the majority of these will be appearing in the last three issues of the Journal and that a more even distribution was not arranged.

One thing, however, should be clearly appreciated. Students of the junior years will realize the greatest value from the Journal by keeping them for reference in the clinical years. A great many of the articles will be found to be of inestimable value at that time.

Furthermore, junior students can remedy the present situation by writing articles themselves. Members of the Editorial Staff will be only too glad to advise or assist them in any way. The Journal is a function of the Medical Society and exists for all the students to make of it what they will.

CRANIO-CEREBRAL INJURIES*

PART I.

By K. G. McKENZIE, M.D.

Hyppocrates devised a classification of head injuries—a form of amusement to surgeons ever since. A comprehensive and entirely satisfactory classification if ever produced will probably be too involved and unwieldly for a single presentation such as this. For the purpose of this paper cases will be divided into two groups (after excluding a small number who are killed or die within a few minutes of the accident); the basis of this division being the most constant and specific evidence of brain dysfunction, namely, unconsciousness.

GROUP 1.—*Comprises patients who remain unconscious for approximately an hour or longer from the time of the accident.*

GROUP 2.—*Comprises patients who are dazed or who are recovering consciousness shortly after the accident.*

Head injuries are ever on the increase so that some education of the lay public with special reference to three points is indicated.

a. Occasionally the patient with a cranio-cerebral injury also has an injury of the spine. All injured patients should be lifted and transported with the neck and back well supported and kept in alignment to prevent irreparable damage to the spinal cord.
b. Any patient who has been dazed or rendered unconscious for a short time should be closely observed during the next twelve hours. If the accident has been in the evening, it should be somebody's duty to waken the patient every two hours.
c. Stupor in a patient with a head injury should not be attributed to intoxication, without at least seriously considering the possibility of brain compression.

Group 1, represents about a tenth of the cases. The patient is immediately rendered unconscious and remains unconscious or semi-conscious for a prolonged period of hours or weeks. In civil life the injury is most commonly produced by the back of the head striking a cement pavement. When a fracture is produced it is usually a linear crack which frequently extends into the base of the skull. Not infrequently there is no fracture. The brain of such a patient almost invariably shows haemorrhage of varying degrees and in varying situations due to contusion and laceration of the brain substance. The superficial bruising and laceration is most marked at a point opposite to the blow, that is, in the frontal lobes and anterior parts of the temporal lobes. Deeper haemorrhages are most commonly seen in the brain-stem. Positive evidence of this bruising and laceration can be obtained by lumbar puncture. When the cerebro-spinal fluid is heavily loaded with blood one postulates a severe and widespread injury, especially when there is profound unconsciousness. Lesser degrees of blood and unconsciousness, as a rule indicate less severe bruising and laceration.

These seriously ill—deeply unconscious patients may be divided into two groups:

1a. Patients who look to be at death's door and usually pass through it within twenty-four hours,—a hopeless sub-group.
1b. Patients in whom the prognosis is precarious and uncertain,—a hopeful sub-group.

With these patients special nurses are advisable until recovery appears

*Presented before the Academies of Medicine, London, and Toronto, Ontario. October 28, and November 16, 1937.

reasonably certain. Constant attention is often necessary to maintain a free airway; this is accomplished by various means, such as the side position and proper arrangement of pillows; an airway may be necessary, occasionally the jaw has to be held forward for prolonged periods. A chart of half-hourly readings of the pulse, respirations, temperature and blood-pressure is of great value. As the hours go by information can be accumulated which enables one to give a good or bad prognosis—and very occasionally institute some necessary and specific surgical treatment.

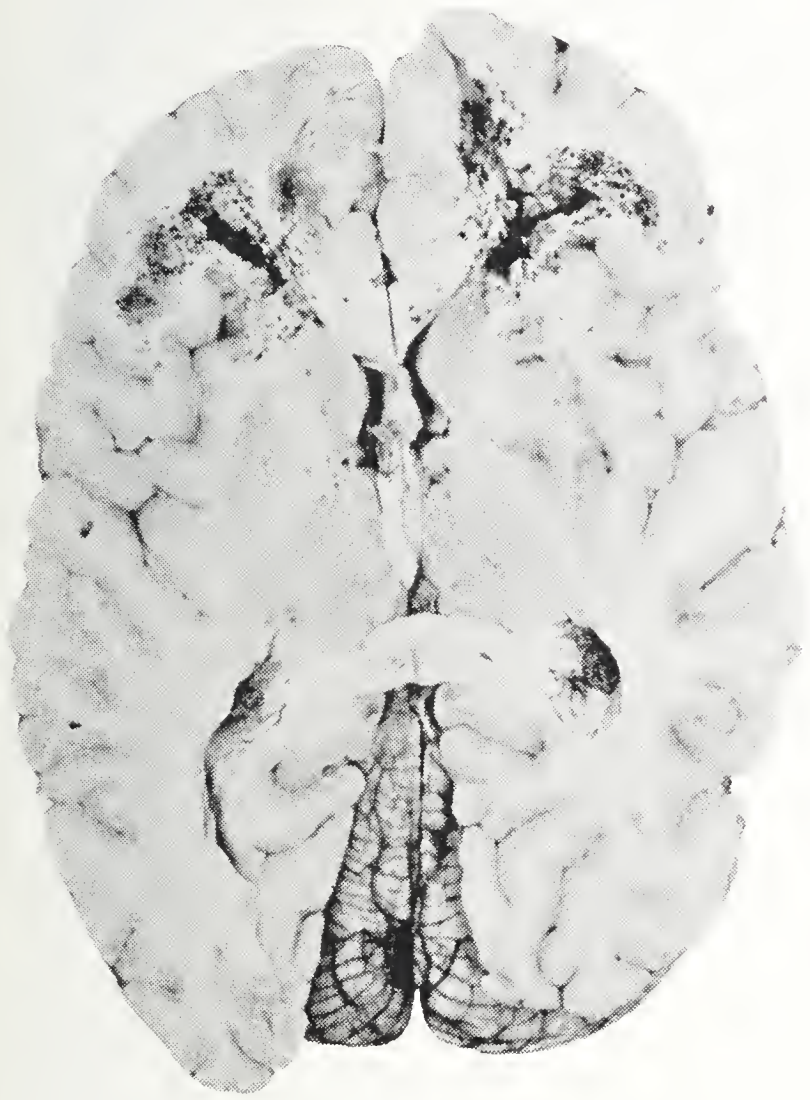

Illustration 1

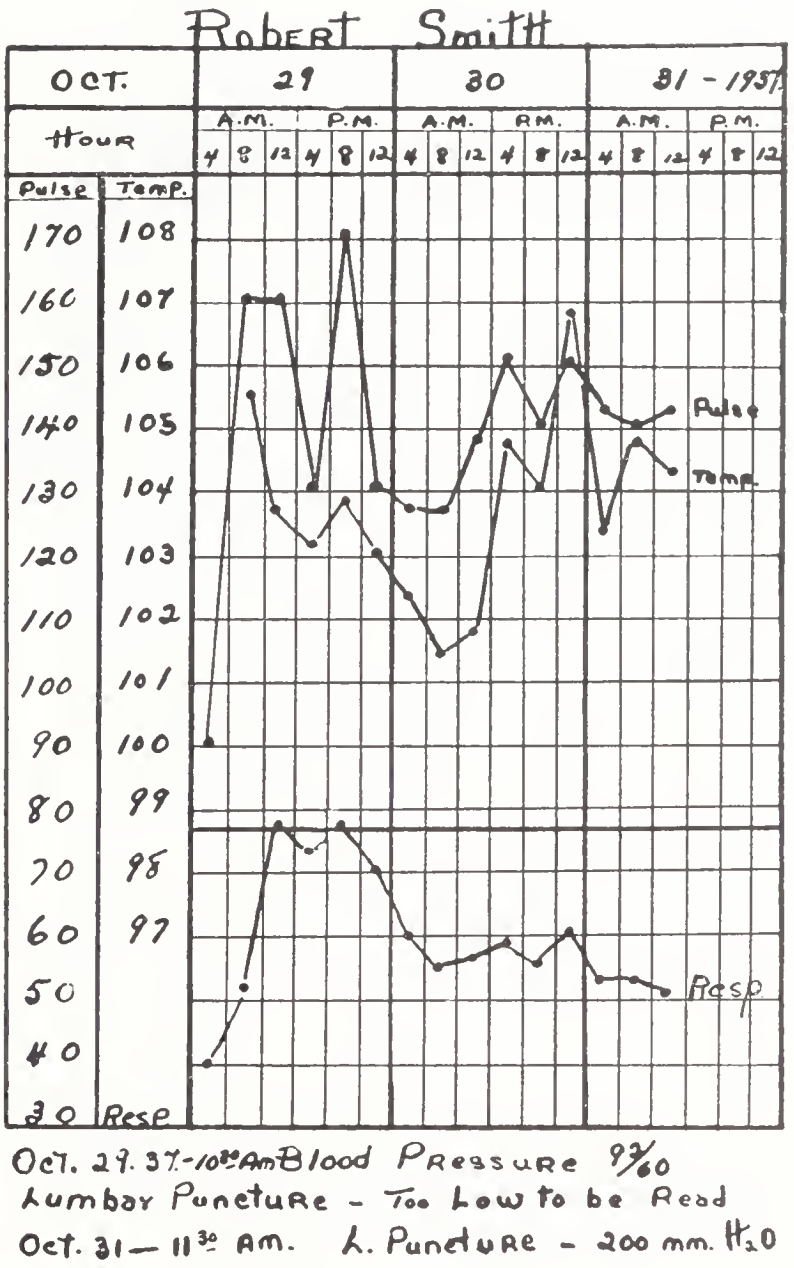

Illustration 2

The clinical picture in Group 1a, is quite characteristic. It is not the unconsciousness, but the disturbed respiratory rhythm which makes one feel that death is imminent. The respirations are rapid and laboured with the accessory respiratory muscles of the neck working. George Eliot in her great novel, Middlemarch (of special interest to doctors), describes a deathbed scene in words which emphasize the outstanding sign in this very seriously ill but fortunately small group of patients: "Her long fair neck seemed to be struggling with a painful effort." Some years ago my Father[1] wrote a paper on this sign, and coined the term 'sterno-mastoid breathing'; he emphasized the fact that recovery is rare in any illness where respiration is embarrased to such an extent that the accessory muscles of respiration are brought into play. Along with this sign there is complete unconsciousness, a fast rising pulse, a falling low blood-pressure and rising temperature. This small group comprises the irreducible mortality rate in brain trauma. Illustrations 1 and 2, show the brain and chart of such a patient.

Group 1b, differs from Group 1a, in that the respiratory rhythm is not seriously disturbed. The profound un-

consciousness persisting for more than half an hour indicates severe brain damage. A fast pulse and low blood-pressure are grave prognostic signs especially if they do not improve in an hour or two. The case becomes well-nigh hopeless when a rising temperature and disturbed respiratory rhythm are superadded. A steadying of the pulse and blood-pressure, smoother respirations, and above all, lessening of unconsciousness are all encouraging signs. Lumbar puncture shows gross blood in the cerebro-spinal fluid; in general the amount of blood is an indication of the extent of the bruising and laceration of the brain. Illustrations 3, and 4, show the usual contrecoup injury in such patients. The patient in Illustration 3, died two days after injury. In Illustration 4, a similar but healed lesion is seen in a brain from a patient who died from an intercurrent disease ten years after a blow on the back of the head which rendered the patient unconscious for four or five days. Although contrecoup bruising is the most common lesion in the group under discussion, intracerebral haemorrhages of varying extent and position are common. Frequently in autopsy specimens the haemorrhage is in the brain-stem as shown in Illustration 5.

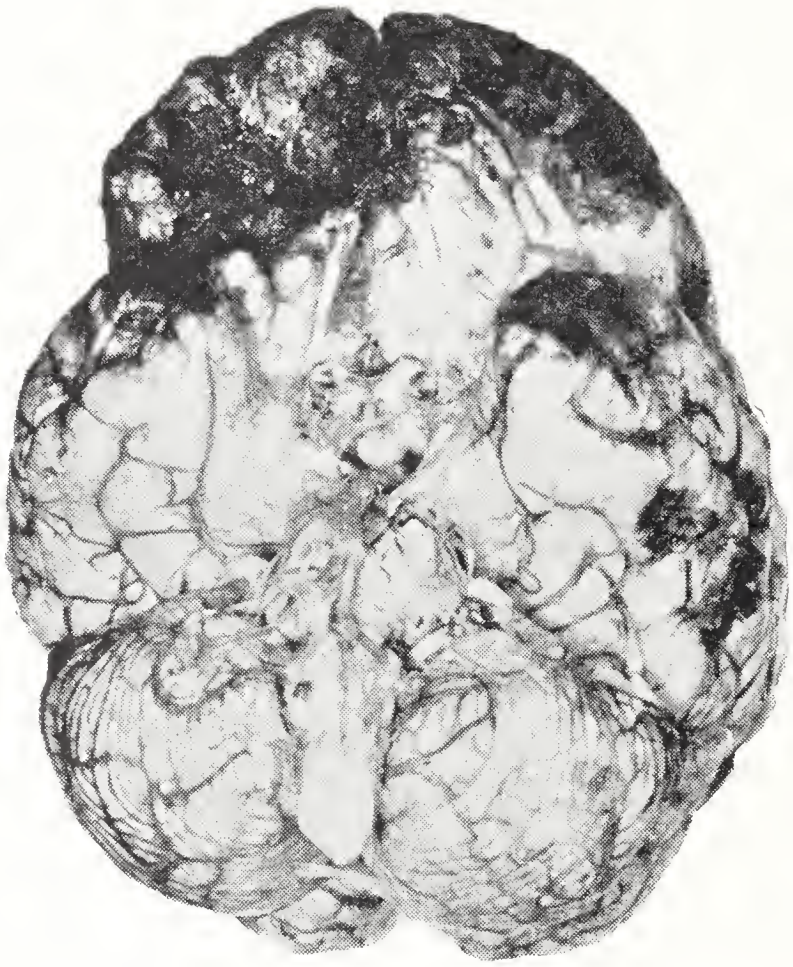

Illustration 3

Illustration 4

We now come to grips with a diffi-

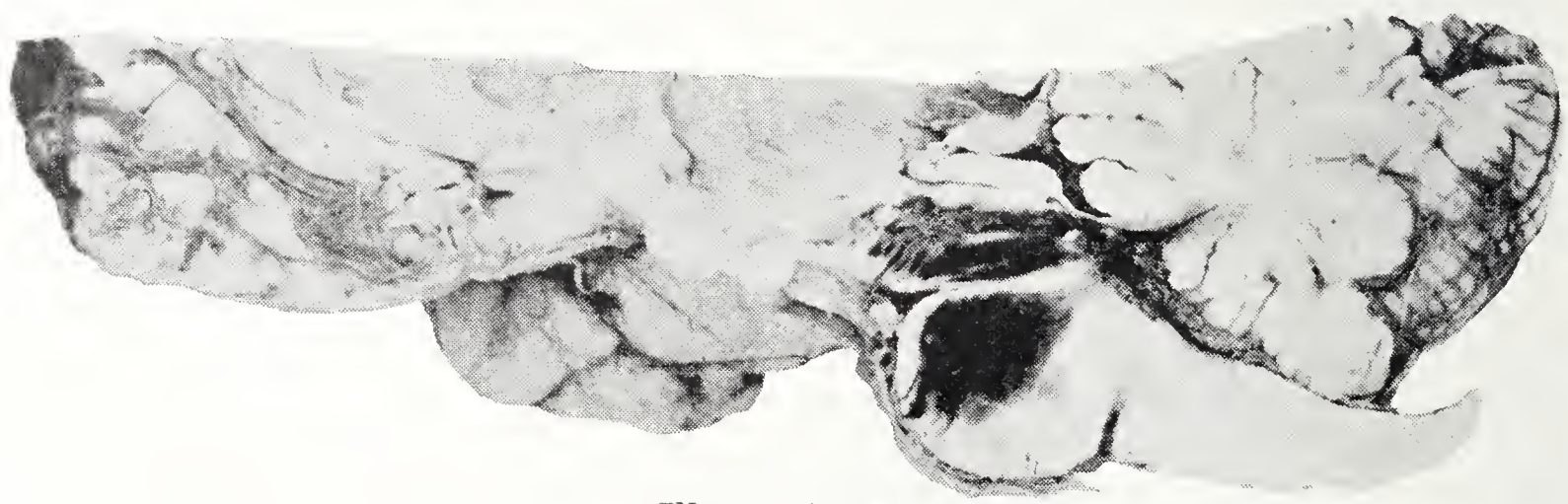

Illustration 5

cult and controversial problem, namely, the treatment of this group of patients —unconscious from the time of the accident and still unconscious when admitted to hospital, with blood in the cerebro-spinal fluid—hopeful, but obviously seriously injured.

Dandy[2] in 1930, advised sub-temporal decompression on 10% of patients, operating on those patients who show no lessening of unconsciousness in six to eight hours. He feels all of these patients have an increased intracranial pressure and that lumbar puncture and dehydration are useless forms of therapy to relieve an increased intracranial pressure. There is one intriguing sentence in Dandy's paper:

"Present day treatment when taken compositely is a curious admixture of tradition, of scientific fact and of fallacies which pass under the cloak of science."

Munro[3] of Boston feels that he has solved the problem by subjecting these patients to repeated and frequent lumbar punctures. In his opinion this is the logical and best way to decrease intracranial pressure.

Fay[4] of Philadelphia, has been an extreme and persistent advocate of dehydration by:

a. With-holding practically all fluids.
b. The withdrawal of fluids from the body by the use of magnesium sulphate in the intestinal tract.
c. The frequent use of intravenous hypertonic solutions such as 100 cc. of 50% glucose.
d. Frequent lumbar puncture.

He feels that the basic principle is to combat increased intracranial pressure and that this is the way to do it.

To many of us it became apparent that lumbar puncture and dehydration therapy were decidedly harmful when used as a routine. As for doing decompressions on 10% of patients, that seems to put the clock back twenty years, when operations were frequent and the mortality rate three times what it is today. Dandy[2] does not quote figures. Fay[4] and Munro[3] have a mortality rate of approximately 18% on all patients who have had a head injury of sufficient seriousness to keep them in hospital. On the same basis the Toronto General Hospital mortality rate during the past five years is 12%. Both Fay and Munro feel that their figures justify the special forms of therapy which they advocate.

The chief argument against routine methods of treatment which are directed towards the lowering of intracranial pressure is that few unconscious patients in the group under discussion *have an increased intracranial* pressure—judged by spinal pressure readings. The fact has been gradually impressed on me, and Zierold[5] in an excellent clinical study of patients who would fall in this group, points this out very forcibly. In only 5% of 128 patients was the pressure really high—in the majority it was normal or sub-normal.

Lehman[6] and Parker[7] of the University of Virginia have recently published an extremely valuable and stimulating paper, "The Unsolved Problems of Brain Injury." Time permits the mention of only a few points, but their consideration should make any doctor pause before interfering with what are likely to be purposeful physiological and protective reactions following brain injury. These are some of their pertinent questions:

"Does oedema follow cerebral contusions? Is it local or general or both? When does it occur? Is it intracellular or interstitial or both? Is it a necessary part of tissue repair?" (The pathologist should answer this for us; as yet no definite method to determine the presence or absence of oedema has been worked out on autopsy material).

"Can oedema in traumatized tissues be influenced by changes in the osmotic pressure in the blood? If so, will the influence be exerted before the normal water reservoirs are exhausted?

"In the patient with cerebral trauma, what is the effect of general dehydration on kidney function?

"In a series of animals with standard intracranial injury are there any differences between controls and those subjected to experimental treatment with various com-

binations of 'dehydration' methods, in mortality rate, duration of unconsciousness, neurological sequelae, or late pathological change?

"Does drainage stimulate overproduction of fluid? Does it tend to create or increase oedema? Does it tend to create vascular congestion? What is its effect on active hemorrhage? What is a safe rate of withdrawal of fluid at varying pressures?

"In a series of animals with standard brain damage, are there any differences between controls and those treated by drainage of cerebrospinal fluid in mortality rate, duration of unconsciousness, neurological sequelae or late pathological change?"

In the light of our present knowledge, the treatment of this seriously ill, unconscious group cannot be summarized in any dogmatic fashion. I would agree with Connors[7] who says:

"(a) Give the brain a chance to stabilize itself without producing more haemorrhage. (b) Maintain fluids. (c) Keep up nourishment. (d) Prevent pneumonia."

The suggestion "give the brain a chance to stabilize itself" indicates a feeling that in the light of our present basic knowledge and also on clinical grounds, it is unwise to interfere with purposeful physiological and pathological reactions by the routine use of dehydration therapy.

Lumbar puncture is of great value but should be utilized only as a diagnostic measure during the first two or three days and only a few drops slowly withdrawn. The amount of blood is a good index of the severity of the contusion. The pressure (a water manometer is best—180 mm. of fluid is the high normal on the Ayer manometer), is an index of intracranial pressure if the cerebro-spinal fluid pathway in the spinal canal is not obstructed. The slow withdrawal of three-quarters of a test tube full of cerebro-spinal fluid is indicated at any time from the third day onward if the patient although recovering consciousness, is restless, complaining of headache and has some rise of temperature. The removal of bloody fluid at this stage frequently results in a marked improvement and relief of headache. If improvement is definite the procedure may be repeated advantageously once or twice a day until the fluid clears on or about the seventh day.

Bagley[8] has shown that blood in the cerebro-spinal fluid may produce meningeal and arachnoid villi reaction of sufficient degree to interfere with the free circulation of the cerebro-spinal fluid. In some of his animals hydrocephalus was produced. On the basis of this work surgeons have advocated frequent lumbar punctures to remove as much blood as possible. Sprong[9] has shown that only a small fraction of the blood can be removed as 75% of it becomes fixed within an hour or two after it is introduced into the sub-arachnoid space of experimental animals—he has also shown that the clearing of the fluid on or about the seventh day is not hastened by frequent lumbar punctures. The clinical fact however remains that the withdrawal of bloody cerebro-spinal fluid from the third day onwards (after bleeding has presumably stopped), is of value in certain patients. It is not a life-saving measure, but restlessness, headache and temperature are frequently ameliorated. Hypertonic solutions introduced intravenously are frequently of value in the same clinical situation. Glucose has been most commonly used, 100 cc. of 50% solution may be given every few hours if it appears to be improving the patient's clinical condition. Sucrose has recently been advocated as it is rapidly excreted in the urine and not taken up by the tissues. Theoretically when the tissues take up the glucose the fluid flow is reversed and instead of being from brain to blood-stream is from blood-stream to brain, and thus a secondary wave of oedema is produced. However, this is a complicated physiological problem, and, whatever the theory, it is a clinical fact that occasionally 50% glucose appears to be of definite value and possibly sucrose may be of still greater value.

The maintenance of a free airway is

considered to be of the utmost importance. Any obstruction to respiration, such as the tongue dropping back, prevents expansion of the chest and dams venous blood back in the brain. Thus further haemorrhage may be produced. In general it may be stated that the maintenance of a free airway is more important than any other therapeutic measure in this group of patients. The tongue and jaw must be kept forward, usually this is simply accomplished by having the patient properly placed on his side; a flat airway, such as used by anaesthetists is valuable. Occasionally a special nurse may have to hold the jaw forward.

Operation can accomplish little and is capable of great harm during the acute period of the first few days. After this period when haemorrhage has presumably stopped — a raised intracranial pressure associated with deepening or no improvement in the unconscious state calls for exploratory burr holes in the hope that sub-dural blood or subdural cerebro-spinal fluid can be removed to combat the raised intracranial pressure. In either of these conditions for which operation is indicated, either lumbar puncture or dehydration therapy is capable of harm, permitting more room for the accumulation of subdural fluid. If operation does not disclose either of these pathological conditions but a brain under tension, then these measures are indicated and may be beneficial. One other real indication for hypertonic solutions may be mentioned here. Occasionally the syndrome of extra-dural haemorrhage is simulated by a unilateral oedema of the brain. After exploratory operation has ruled out extra-dural haemorrhage and a nick in the dura has shown that the brain is under tension, hypertonic solutions are of definite value and in this situation frequently bring about a rapid amelioration of the signs and symptoms.

Fluids are maintained at an adequate level, this is especially important in older people who are likely to have some cardio-vascular renal disease. In general no fluids need be given during the first six hours. After that period 2,500 cc. are given during each twenty-four hour period. During the time when the patient does not swallow readily this is given intravenously. If the unconscious state persists, fluids and nourishment are best given through a duodenal tube passed through the floor of the nose into the stomach. The tube can be left in place for several days. It is of the utmost importance to guard against the production of aspiration pneumonia by the introduction of fluids and food into the mouth before the swallowing reflex is adequately re-established. In this deep unconscious state the head down position is frequently utilized so that any collection in the mouth will drain out rather than down the trachea.

To summarize again:

During the first three days—routine careful care with adequate fluid intake and free airway. Lumbar puncture as a diagnostic measure only to determine the amount of blood and the intracranial pressure. No hypertonic glucose, dehydration, or drainage of cerebro-spinal fluid. Under this conservative regime the majority of patients will show increasing consciousness and be on the road to recovery before or at the end of three days. A few will still be unconscious and show a raised intracranial pressure. In these, exploratory burr holes are indicated on the fourth or fifth day, especially if the unconsciousness is more marked. Hypertonic glucose is given to this small group if operation does not disclose subdural blood or sub-dural cerebro-spinal fluid. In general the attitude is a very conservative one, because it is felt that it is unwise to interfere with purposeful changes in physiology and pathology after trauma unless the indications are really quite definite.

I wish to express my thanks to Doctor Botterell for analyzing our mortality rate, and to Professor Linell, Department of Neuro-pathology, for the illustrations.

NOTE.—Part II. of this paper will be published in a future edition of the Students' journal.

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THE PATHOLOGY OF ISCHIO-RECTAL ABSCESS AND FISTULA IN ANO AND THEIR TREATMENT

By JAMES T. DANIS, M.D., F.R.C.S. (Edin.)

In order to properly appreciate the symptomatology of ischio-rectal abscess and fistula in ano a more or less detailed knowledge of the anatomy of the part is necessary. For our present purpose the pelvis proper may be divided into an upper intra-peritoneal portion and a lower extra-peritoneal portion, the line of division occurring along the line of the levator ani.

The levatores ani and coccygeus muscles which are morphologically the same muscle sheath, act as a diaphragm separating the pelvic cavity from the perineum. The levator ani arises from the posterior surfaces of the pubic symphysis, then along a line on the obturator fascia to the ischial spine, the coccygeus arising from the spine just above the former muscle. The posterior fibres of this muscle sheath are attached to the sides of the coccyx and lower two sacral vertebrae. The muscles of the two sides meet in the mid line, the meeting being interrupted only by the tubular structures coming down from the pelvis and perforating this diaphragm to reach the perineum. In the male these tubular structures are the prostatic urethra and the rectum; in the female, the urethra, vagina and rectum. This anatomical arrangement accounts for the fact that in the male the membranous and bulbous urethra and the terminal one and a half inches of large bowel (the anal canal), and in the female, the urethra, the terminal part of the vagina and anal canal, lie outside the pelvic cavity.

The ischio-rectal space, or fossa, is that which lies between the anal canal, medially, and the side wall of the pelvis, below the attachment of the levator ani, laterally. The space is limited above, by the oblique inferior surface of the levator ani; medially, by the anal canal and external sphincter ani muscle; laterally, by a continuation of the parietal pelvic fascia, the obturator fascia, so-called because it covers the obturator internus muscle; anteriorly, the space is limited by the deep layer of the urogenital diaphragm which is also a continuation of the pelvic fascia, and posteriorly, it is limited by the great sacro-sciatic ligament and the inferior border of the gluteus maximus muscle.

The anal canal for anatomical and pathological reasons is divided into an upper two thirds and a lower one third, the upper part being lined by columnar, the lower, by modified squamous epithelium. The mucosa lining the upper two thirds of the anal canal is disposed in longitudinal columns (of Morgagni) caused by the haemorrhoidal plexus of veins. Between these folds the mucosa is somewhat depressed forming two longitudinal grooves which end blindly in small recesses, sinuses or crypts. Overhanging these recesses are tufts of mucosa laden with lymphoid tissue and termed papillae.

The precursor of an ischio-rectal abscess is an infection of the lymphoid tissue in the anal crypt, the organisms gaining entrance following a slight tear in the mucosa. At this early stage the condition is rarely recognized clinically as it causes few symptoms. The infection then burrows its way through the anal canal, above, superficial to, or through the external sphincter, the latter being the most common route. Having reached the fatty tissues of the ischio-rectal fossa the organisms develop rapidly because all fat tissue resists infection poorly and a great deal of destruction occurs before the abscess "points" to the skin surface. A true abscess wall is never formed. A typical abscess will rupture spontaneously or by the surgeon's knife, leading to the formation of a fistula which may be defined as an abnormal tract in the ischio-rectal fossa, having an internal opening in the anal canal from whence the infection came and an external opening on the skin of the ischio-rectal fossa or buttocks. This is the simplest form of fistula. Spasm of the external sphincter usually prevents the abscess from rupturing into the anal canal but if there is considerable destruction of the muscle fibres the abscess may empty into the anal canal, leading to a "blind" internal fistula.

Occasionally an abscess in addition to opening upon the skin surface will rupture into the bowel at a point above the original or primary opening at the pectinate line. In this type of case we have two openings into the bowel, viz: one at the pectinate line, the primary opening, and another one higher up, a secondary opening. Even at the expense of repetition, may I remind you that the primary opening in the anal canal is so-called because it is the point where the infection first broke through the wall of the anal canal into the ischio-rectal fossa. Occasionally the abscess may become adherent to the roof of the fossa (the levator ani) and rupture into the pelvic cavity, rarely into an adherent loop of intestine at this point. The readiness with which the infection spreads in this fatty tissue explains the rather unusual rupture of such an abscess into the prostatic or bulbous urethra or through the posterior vaginal wall. Rarely an ischio-rectal abscess may be the result of a direct extension of a lesion in the lower sacral or coccygeal vertebra or bony pelvis. It may also result from a puncture wound on the skin surface or from the entrance of a foreign body such as a piece of metal or a needle from the anal canal.

The treatment of an ischio-rectal abscess consists in early and adequate drainage. It is not necessary or advisable to wait until such an abscess "points" on the surface as it is easy to see how considerable destruction and softening may occur deep in the fossa before superficial signs are apparent. In such cases digital rectal examination will reveal tender swelling in the lumen of the anal canal. As a rule though, the skin over the abscess is oedematous and inflamed. Such abscesses should never be opened without an anaesthetic. Local anaesthesia such as novocaine or ethyl chloride should not be used; a spinal anaesthetic is by far the best, the patient being placed in the lithotomy position. My only objection to ether is that it takes too long. A digital rectal examination is always done just prior to operation.

Under no circumstances should the abscess be opened on the bowel surface.

A curved incision is made parallel to the fibres of the external sphincter over the apex of the swelling and should be carried slightly beyond the indurated margin of the swelling. The opening is then enlarged by a transverse incision carried laterally from the centre of the one just completed: this is also carried out beyond the apparent swelling. Two corners are now grasped with tissue forceps, gently rolled out and cut away with curved scissors so that the resultant margins are convex toward the centre. By such a method the abscess cavity is "deroofed" or "scalped." Now gently insert the finger into the depths of the cavity to make sure that there are no concealed pockets. Do not thrust a finger or instrument through the anal wall. A biopsy is taken in all cases. This type of incision insures adequate drainage and allows the edges to slowly fall back in place as healing progresses. The bleeding points are suture-ligated, the cavity swabbed with metaphen and loosely packed with iodoform gauze which is allowed to soak out in twenty-four hours, and is not replaced unless there is considerable oozing. I have never found it necessary to replace the packing. The day after the operation the wound is treated by means of sitz baths twice daily and after bowel movements. It is amazing how even the largest cavities will heal in a comparatively short period leaving only a narrow T-shaped scar.

In spite of efficient treatment a certain percentage (twenty-five to forty per cent) of ischio-rectal abscesses will result in the development of a fistula. The successful treatment of a fistula in ano is surgical. The presence of multiple external openings in the skin suggests the possibility of re-current abscess formation with spontaneous rupture or improper surgical treatment. If the skin is undermined the possibility of tuberculosis should be borne in mind. The classification of fistula tracts into J-shaped, Y-shaped, or U-shaped, is of no practical advantage.

Surgical treatment consists of the complete excision of these tracts and all adjacent diseased tissue. It must be borne in mind that regardless of the number of secondary openings there is always one, the primary opening, in the anal canal which should be searched for and explored. Ignorance of this fact is responsible for most of the disappointments in the treatment of this condition.

Many surgeons still make use of colored solutions such as methylene blue in identifying these tracts. I have, for some time, given up their use. Many of these tracts are tortuous and stenosed, making the successful introduction of such solutions impossible in which event they obscure the field. The lining of these tracts present a typical appearance which can be readily recognized from normal tissue, provided the lighting is adequate. The patient is placed in the lithotomy position.

It is not a good practice to digitally dilate the anal canal as this causes further distortion of the tracts. That is why I prefer spinal anaesthesia because there is immediate and complete relaxation of the anal canal. A small grooved director is gently passed down the tract from the external opening and an incision is made over the skin down into the tract. A curved, pointed pair of scissors is then used to follow the tract, or tracts, onwards. All tracts are opened up, the overlying tissue as well as all surrounding necrotic tissue being cut away, regardless of its relation to the sphincter muscles. If the tract, in addition to opening into the anal canal, is found to extend along and open into the bowel above the pectinate line, the intervening portion of the bowel must be slit open so as to leave a gutter lined by normal tissue. I make it a practice to save for biopsies, bits of tissue removed "en route." Abrupt skin margins are gently shelved and it is always advisable to remove a good portion of skin overhanging these edges.

All tracts having been excised, the

cavities are left open, the bleeding points secured, and the cavity is swabbed with metaphen and packed with iodoform gauze. The post-operative treatment is similar to that described for abscess. After the packing is removed in twenty-four hours or so, it should not be replaced. It is best to allow the separated edges and severed muscle fibres to fall back in place and to gradually find their proper alignment. It is surprising what nature will do if given an opportunity. Certainly prolonged packing will prevent the cut margins of the sphincter muscles from coming together by the introduction of a wide band of fibrous tissue between them.

Unless the amount of tissue removed is great, these patients are encouraged to get out of bed and walk about the room the day following the operation. They are placed on full diet as soon as tolerated. If a considerable portion of the sphincter has been sacrificed it is advisable not to administer cathartics but instead, normal saline enemas are administered, preceded by ten ounces of Hydrogen Peroxide (1 in 6). Rectal incontinence for a few days is to be expected in severe cases and the surgeon must look upon this, not in amazement, but as something quite to be expected. It will not be good for the patient if the surgeon looks worried.

One word about the relationship of tuberculosis to fistula in ano. The incidence claimed in most text books, is, I think rather high. My own experience is that only about four per cent of all fistulae admittted to a general hospital prove to be tuberculosis on section. It is interesting to note that the incidence of fistulae among patients in Sanatoria for Tuberculosis is surprisingly low, e.g., between five and ten per cent. I have personal knowledge of a patient suffering from active pulmonary tuberculosis who had a fistula of non-tuberculous origin.

Rarely, actinomycosis or malignant neoplasms in the lower bowel will cause fistulae or an abscess from degeneration and infection, emphasizing the importance of a digital rectal, if not a proctoscopic, examination in all cases presenting symptoms referable to the lower bowel or ischio-rectal fossae.

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LABORATORY PROCEDURES USED IN THE DIAGNOSIS OF SYPHILIS

By P. H. GREEY, M.D., B.Sc. (Med.).

The methods that may be used for the diagnosis of syphilis vary with the stage of the disease. As the application of the various techniques available for use at any one stage should be obvious this discussion will be confined to the tests themselves.

In the main laboratory procedures are directed towards the demonstration either of the treponema pallidum itself or of specific complement-fixing, or flocculating antibodies. Tests are thus of two types (a) Microscopical (b) Serological.

Microscopical

Because early diagnosis increases the percentage of cures by treponemocidal drugs, too much emphasis cannot be laid on the importance of making a diagnosis early in the primary stage.

Such a diagnosis consists in the visualization of the treponema pallidum in material from the lesion. This is most readily done with a *dark-field* microscope. The organism is a thin delicate spirochaete with tapering ends. It varies in length from 8-16 microns while the breadth is about 0.2 micron. The body is coiled in sharp, rigid regular spirals of an even number, 8 - 14. It moves by a rotational motion but does not progress rapidly or far.

The saprophytic spirochaetal flora in primary penile chancres is usually not great while in other situations, such as the lip and female genitalia, it is apt to be complex and luxuriant. Identification of treponema pallidum requires the recognition of fine differences in morphology without the aid of staining reactions and this necessitates long experience. Caution must therefore be observed by the beginner in basing a diagnosis on microscopical examination alone.

The material for examination is usually obtained by rubbing the sore with gauze. Some serum mixed with blood will first escape. This should not be collected as later clear fluid will exude. Blood is to be avoided in the exudate as it is very apt to give rise to artefacts, in fact one of the easiest ways of producing non-motile spirochaetes is to touch a drop of blood with a warm loop.

If dark-field equipment is not available some of the exudate can be collected in a fine capillary tube by capillary attraction and the ends sealed with vaseline. Such preparations have been shown to be suitable for examination many months after collection even though they have been exposed to great variations in temperature. Suitable diagnostic equipment of this type is supplied to physicians by the Department of Public Health.

Other methods also have been devised for the microscopical demonstration of treponema pallidum. In this category are stains such as *Giemsa's* which colours the organism rose-red and *silver impregnations* like Fontana's. Visualizing effects analogous to those obtained with dark-field equipment can be produced by mixing with the exudate substances such as *India ink* or Nigrosine and allowing the preparation to dry. In these the organisms are unstained but are outlined by the even homogeneous background produced by the above substances. Considerable experience is required for the microscopical examination of such preparations.

Histological examination of the involved tissues is utilized almost entirely in the later stages of the disease and in the still-born foetus. Tissue sections stained by haemotoxylin and eosin are studied for the presence of a gummatous type of granuloma. The diagnosis is clinched by finding spirochaetes in sections stained by Levaditi's method.

Animal inoculation is used very infrequently to-day for diagnosis. The method of choice being the intratesticular route in rabbits. A "take" can be told by serological tests or by direct examination of testicular or lymphatic tissue. As the percentage of successful transfers is not very high this method is of academic rather than practical value.

The same may be said of isolation of the organism by use of *culture media.*

Serological

1. Wassermann Reaction:

Many investigations have failed to demonstrate either protective or curative substances in the blood serum of a syphilitic person. Treponema pallidum is not agglutinated by syphilitic sera. Nevertheless the serum of syphilitics does contain substances that react, in a highly specific manner, with lipoidal extracts of muscle and other tissues of normal mammals. These reactions can be demonstrated through complement-fixation and precipitation methods.

Complement, as the name indicates, is a substance which completes many immunological reactions. It is present in the blood serum of man and animals being very plentiful and of rather constant titre in that of the guinea pig. Certain immune bodies (bacteriolysins and haemolysins) will not complete their reactions with the antigenic substances (bacteria and red blood cell) that led to their formation unless complement is present. The active part that complement plays in such reactions is shown by the fact that complement is entirely used up or fixed when the reaction is complete. It disappears as an active substance from the mixture and can no longer be demonstrated. Its presence or absence therefore may be used as an indicator that an antibody-antigen reaction has or has not taken place.

An antigen is any substance which gives rise in the body to specific substances that act on, or react with it and these are called antibodies. An antigen may be bacteria, body cells or a chemical protein-complex. Antibodies are thermostable and are not destroyed by heating to 56 degrees C.

The Wassermann reaction is based upon the fact that certain antigens, when mixed with their corresponding antibody and complement, bring about a union of the complement with the antigen so that the complement is no longer reactive. In this test a known antigen is mixed with complement and the patient's serum. The unknown is the patient's serum and it is being tested for the presence of antibody. If such an antibody is present the complement will disappear from the solution, if not it will remain. By the behaviour of complement then, the presence or absence of reacting substances in the patient's serum can be determined.

All the fluids used in the above mixture, however, are clear and colourless and the combining of antigen with antibody and complement is not accompanied by any change visible to the eye, such as flocculation. The solutions appear the same whether complement has been fixed or not. It therefore becomes necessary, after the interval allowed for fixation of complement, to test the mixture with an indicator whose change will be readily apparent to the naked eye, if free complement is present. Such an indicator we have in red blood cells and their destructive antibody, haemolysin. For when red blood cells and haemolysin are mixed no visible change results but if complement is added, laking or haemolysis of the cells occurs, which is apparent at a glance.

The Wassermann reaction thus consists of two steps. In the first, the antigen, complement and the patient's serum are placed in a test tube. Sufficient time is allowed for any possible union of these substances (usually one hour of incubation). Step two consists of the addition of red blood cells previously treated with haemolysin (the so-called sensitized red cells). Fol-

lowing incubation for another hour the tube is examined. If the added red blood cells are laked, we know that there must have been free complement in the tube after step-one. This could only occur because the patient's serum did not possess the antibody that was tested for. On the other hand if the red blood cells were not laked, it would mean that there was no complement free after step one and therefore the patient's serum must have contained antibodies. The presence of these indicates a syphilitic infection.

The actual performance of the Wassermann reaction requires a nice balance of the substances used.

The following are the reagents: (a) Complement—in the form of fresh guinea pig serum. A known amount of complement is used in each test, usually three units, so that a titration of complement must be done before use; (b) Patient's serum—this is first heated to 56° C. for ½ hour to destroy the complement it contains as otherwise it might interfere with the balance of the antibody-antigen system. It is usually customary to do a three tube test, using decreasing amounts of the patient's serum, e.g. 0.2, 0.1 and 0.05 cc., so as to obtain some idea of the amount of antibody present. Complete fixation in all three tubes is a very strongly positive reaction. (c) Antigen—is an alcoholic extract of heart muscle or other tissue, the sensitivity of which has been enhanced by the addition of 0.4% cholesterin. It thus is non-specific in the sense that it does not contain treponema pallida but it reacts as though it were the actual cause of the reacting substances present in the serum of a syphilitic person. (d) Sensitized red cells—these are sheep red blood cells that have been treated with the blood serum of a rabbit that has been repeatedly injected with sheep red blood cells. They are used in a constant amount.

Because a small percentage of human sera have the power of destroying complement, a control must be carried out with each serum tested. It consists in adding the patient's serum to complement. There is no antigen in the tube. After one hour incubation sensitized red cells are added. If on completion of the reaction all of the cells have not been laked, no opinion can be given on the result of fixation in the other tubes as the patient's serum obviously is non-specifically destroying complement.

2. Precipitation Reactions.

Based on our knowledge of antigen-antibody reactions in general, one would expect substances that give complement-fixation under a particular set of conditions would give visible flocculation if the conditions were suitably adjusted. Such is the case with the lipoid antigens and serum antibodies in syphilis. Nearly as many precipitation tests have been described as there are modifications of the Wassermann reaction but the Kahn method has generally been found most reliable. Precipitation reactions have obvious advantages. They are easy to perform and require only two reagents — patient's serum and antigen. Furthermore, many of them can be read in a few minutes' time.

The Kahn antigen is essentially the same as that used in the Wassermann reaction. For use the antigen is diluted with saline until a cloudy colloidal suspension is obtained. This disperses to give a clear solution on the addition of more saline or of serum. When properly adjusted such an antigen in the presence of a syphilitic serum will give an almost immediate precipitate especially if flocculation is assisted by shaking. In the presence of normal serum the solution remains clear and translucent.

Some precipitation reactions have been so simplified that they can be carried out by simply mixing a loopful of serum with a loopful of antigen. The patient's serum, however, should always be heated to 56° C. for thirty minutes before use, as this intensifies the reaction.

It may be added that these reactions may also be applied to the cerebro-

spinal fluid in suspected cases of neurosyphilis. Some precipitation methods, however, give poor results.

Finally, it must be emphasized that neither a complement-fixation or precipitation reaction is absolutely diagnostic of syphilis. A positive test does not always indicate syphilis and a negative test does not exclude syphilis. Negative reactions are frequent during the first two or three weeks after the chancre appears and are very rare in the secondary stage. A negative reaction tells against but does not exclude a diagnosis of tertiary syphilis. The results of the reactions must be interpreted by the clinician in the light of a complete knowledge of the case.

THE MEDICINAL TREATMENT OF URINARY INFECTIONS

By D. R. MITCHELL, M.D., F.R.C.S.

In the year 1930 there were literally scores of urinary antiseptics; in the year 1937 there are two which dominate the field. That these two have emerged is more by accident than the result of deduction. That they are effective, however, is borne out by experience. How they act to sterilize the urine no one knows, but we are beginning to learn how and when to apply one or the other and how to control urinary acidity. We know considerably more about the organisms infecting the urinary tracts. We know that the urinary acidity must be controlled for these antiseptics to act. How the future, even the near future will modify our impressions time only will tell.

Until recently alkalies were used considerably, empirically, hoping to combat toxaemia and reduce dysuria. Weak acidification if any was accomplished by acid sodium phosphate; and dyes or other commercial preparations weakly bactericidal or bacteriostatic were employed. That alkalies and the dyes have been in use for years and still are employed must mean that they have some therapeutic value.

Realization came early as to the importance of urinary Ph in the treatment of urinary infections. It was discovered that certain organisms grew in acid urine and efforts were directed to raising the Ph and vice versa. Now we are more inclined to believe that the Ph is a resultant of chemical action engendered by the organism or by ferments of the organisms. An effort to make frequent changes of Ph was advocated by some but the dissatisfaction with all these methods has been borne out by the avidity with which people searched for more effective means of combating infection.

The first sensible work was done in the late twenties by investigators who wondered if Acid Sodium Phosphate really did shift the Ph of the urine to the acid side and to their doubts experiment added the certainty that the drug employed for 25 years without question was entirely inadequate. Further work by others brought into favour Ammonium Chloride, Ammonium Nitrate, Ammonium Acid Phosphate, Hydrochloric acid and many others, but the one most universally used now is Ammonium Chloride. The rationale of this use is that the Chlorine radical is left free to take up basic ions after the Ammonia has been split off and excreted as urea. Ammonium Chloride is probably the most efficient acidifier yet employed, although it is frequently poorly tolerated.

Ammonium Chloride is capable of reducing the Ph of urine to somewhere under 6 and often to between Ph 5 and Ph 5.5. In these ranges Hexamine (Urotropin) breaks down in the urine to produce formaldehyde which

as everyone knows is a reducing agent and is also very active in conjugating with compounds of other chemical nature. These drugs are given with licorice, are inexpensive and give very good results.

This mixture is employed at various hospitals but is not received in great favour for several reasons. First, it does not cure all the patients, probably only one third. It improves another third and has no effect whatsoever on the remaining third. Secondly it is a difficult mixture to retain on the stomach for many patients and thirdly it produces strangury in a considerable percentage. However, it is a definite advance and when administered intelligently is often attended by strikingly good results.

In 1932 at Mayos the antiseptic qualities of Ketogenic urine were discovered by accident and, without diverging to recount how Mandelic acid, an aromatic acid allied to beta-oxybutyric acid, came into use, first in its acid form and later as the acidifying Ammonium salt. This acid is allegedly secreted by the kidney and when in sufficient concentration in a sufficiently acidified urine it is bactericidal. That it is highly efficient is borne out by our own experience and that of others. It is given to all patients with acid urine and to those patients whose urine can be made acid by the salt alone or aided by other acidifiers. The Ph must be below 5.5 and for best results should be close to Ph 5. It is absolutely useless in an alkaline urine. Its action so far is empirical but Mandelic is recognized as the most effective acid in its series. So now if the urine is acid we simply give Ammonium Mandelate and hope for practically immediate results as shown by obtaining relief from dysuria within a few hours and sterile urine in a few days. If the urine is sufficiently acidified and prompt results are not forthcoming the probability of a good result is poor. If the urine is not sufficiently acid further acidifier (Ammonium Chloride) must be added to given optimum acidity before the drug be discontinued as a failure. If the urine refuses to become acid there is no use giving the Mandelate.

Certain warnings have been sounded as contra-indicating the use of Ammonium Mandelate. It is not given to extremely ill patients with high fever suffering from pyelitis or pyelonephritis. In some cases it causes irritation of the kidney as shown by casts and albumin in the urine. In such cases the drug should be discontinued whereupon the casts and albumin disappear. If there is impaired renal function it is not used, first because it does irritate the kidneys and secondly the drug requires normal secreting power of the kidney and proper concentration in the urine to be effective and such is not the case in the urine of a damaged kidney. And finally experimental work on dogs shows that it causes haemorrhages in the kidney and liver, so patients with liver damage might well be classed with those who should not have the drug. It might be stated that these haemorrhages are not serious and are not present in the organs of the dogs a reasonable interval after discontinuing the drug.

At the present time, infections, in acid urine or in those urines which can be made sufficiently acid, are treated by means of Ammonium Mandelate and very effectively so. This, however, fails to aid us in those urines infected by organisms such as B. Proteus, some Staphylococci, etc., that have ferments splitting urea to Ammonia and producing persistently alkaline urines. But fortunately Sulfanilamide came into use, was applied to urinary tract infections, and was found to be an effective urinary antiseptic and especially so in alkaline urines.

The use of Sulfanilamide for urinary infections naturally followed its recognized effectiveness with Gonococcal inflammations. How it acts no one knows but it can rid some patients of very active acute inflammations in a surprisingly short time. By a short

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time is meant two or three days with almost immediate relief of symptoms.

So far one has had Pyelitis and Cystitis in mind but when considering lower urinary tract infections one must also consider Prostatitis and Urethritis both Specific and Non-Specific. Infections in these latter sites are not affected by Ammonium Mandelate but do respond fairly well to Sulfanilamide treatment. Urinary acidity plays no part so there is no attempt made to control it. Gonorrhoeal Urethritis responds best of all Urethritidies. The response is almost instantaneous in those who can be cured by this drug and cure is achieved within the space of one to two weeks. Those who require prolonged dosage for cure are probably better treated by older methods which do not carry quite the same risk. Very few complications have occurred and none of a serious nature with Sulfanilamide; yet it is a drug which is undoubtedly toxic and should be discontinued immediately if not effective but administered as soon as possible if it is effective.

The effect of Sulfanilamide on nonspecific Urethritis is slight but occasionally patients do respond. The drug is reported to be excreted by the prostrate but only in sub-bactericidal concentration. Some patients with prostatitis, however, do respond to Sulfanilamide therapy. Probably our two most effective methods of treating prostatitis at the present time are the orthodox routine massage and the recent vogue of short wave therapy.

MULTIPLE PREGNANCY

By GILLEAN MacKINNON, '38.

When there is more than one ovum in the uterus at the same time multiple or plural pregnancy exists. Bigeminal or gemellary pregnancy (twins) is the commonest variety of this. Next commonest is the trigeminal or triplet pregnancy, then comes the quadrigeminal or quadruplet pregnancy. It is also possible to have quintuplets or sextuplets. The Dionne sisters are the only quintuplets that have remained alive, although other quintuplets and also sextuplets have been born only to die shortly after. Early medical and non-medical literature contains many references to cases of multiple pregnancy. Medieval writers loved to astound their readers with accounts of ladies having an amazing number of babies. Thus Borellus, in 1650 A.D. writes:

> Uxor nobilis D. Darre unico puerperio octo foetus enixa est probe conformatos, quod valde in his regionibus insolens est: tres enim tantum vitales simul enixos videram.
>
> The wife of the noble D. Darre was delivered of eight well-formed foetuses at the one labour, which is rare in these parts: three, indeed, being the most I had seen brought forth alive.

Perhaps the height of fecundity is cited by one author who tells of a certain famous Queen who was delivered of no less than three hundred babies at one and the same time. The less credulous medical historians set seven or eight as a possible outside limit, and the combined weight is somewhere from 9-12 lbs.

Occurrence:

Multiple pregnancies are more common in Ireland, Germany and Russia. Twins occur once in every 90 pregnancies, triplets once in 7,900, quadruplets once in 371,000 and quintuplets about once in 29,000,000 pregnancies. It has been pointed out that the frequency of multiple births, (twins, triplets, quadruplets, quintuplets, sextuplets) is roughly in inverse proportion to the square of the number 86, thus: Single births: twins: triplets: quadruplets: $: 1 : \frac{1}{86} : \frac{1}{86 \times 86} : \frac{1}{86 \times 86 \times 86}$.

Varieties:

Twins are described as being either uniovular or binovular. In the latter they arise from two fertilized ova. In the former, just the one ovum is fertilized but the blastoderm divides or else there are two blastoderms. A triplet or quadruplet pregnancy may be a combination of either or both. Binovular twins are five times as common as uniovular twins, and are often referred to as dissimilar, fraternal or dizygotic twins. Uniovular twins are also called monozygotic, similar or identical twins.

Etiology:

Fraternal twins may arise in two ways: (1) by Superfecundation, where fertilization of two ova has occurred at different times of the same intermenstrual period and by (2) Superfetation, where ova of different menstrual periods have been fertilized. Fertilization can only occur when the uterine cavity is not completely obliterated by fusion of the decidua capsularis and vera, which is usually complete at the end of the third month. Therefore true cases of superfetation are probably rarer than is thought. That it can occur is shown by the case of the white woman that had intercourse first with a white man and a few days later with a colored man. Nine months later she was delivered of a pair of twins, one white resembling the first man, and the other dark resembling the second!

There are always two chorions, two

amnions, and two placentae in the case of fraternal twins. They may be of opposite sex and are stronger than identical twins as a rule. When one ovum dies, if not expelled, it is compressed by the other growing ovum to give the so-called foetus papyraceus.

With identical twins there is some variation in the arrangement of the placenta and membranes, but there are generally two chorions, two amnions and one placenta. There is always a communication between the circulations of the two foetuses in the placenta and if this is very marked the foetus is apt to suffer, occasionally producing the "Acardiac Monster." The frequent occurrence of polyhydramnios may also be explained by this communication between the two circulations. The partitions between the amnions may disappear and in the later months of pregnancy there is only one cavity. These twins are always of the same sex, resemble each other in appearance and are generally of small size, being frequently malformed.

There is an undoubted heritable tendency to twinning. In some families 5-15% of births are twin births whereas in the general population the incidence is from 1-1.5%. When this familial trait exists, the twins are usually of the uniovular variety. Why this trait should run in families has been the subject of much controversy but Davenport who has gone into the subject rather deeply concludes that the heritable tendency lies in the male and "upon such a quality of the sperm as shall result in a high proportion of fertilization of eggs ovulated and a small proportion of fertilized eggs containing lethal factors." (The fertilized ovum is considered to inhibit additional fertilizations.)

Course of Pregnancy:

The general complications such as toxaemia, polyhydramnios accidental haemorrhage, varicosities, pyelitis, etc., are more frequent and the general discomfort is greater.

Diagnosis:

In practice, most twins are diagnosed after the first child is born. One cannot make a positive diagnosis on the size or the apparent multiplicity of small parts. A positive diagnosis can be made however on feeling two heads or two breeches. (Three heads or three breeches in the case of triplets). Confusion may arise here from a fibroid or ovarian cyst and the polyhydramnios which is a common complication of multiple pregnancy, makes palpation doubly difficult or impossible.

The recognition of two distinct foetal motions has been described as a positive sign in the diagnosis. So has the hearing of two foetal hearts of different rates. However, the heart sounds in twins rarely differ more than 7-8 beats per minute so that to get this point two observers must work together and see if the heart beats synchronize or not. Vaginal examination may reveal the fact that there are two intact bags of membranes which may be felt if the cervix is sufficiently dilated. When two fingers can be passed through the cervix one might feel a prolapsed foot at the side of a presenting head. Or you might feel a pulseless cord and at the same time have auscultatory proof of the presence of a living child. Or, again, one might feel two heads or two breeches side by side. X-ray evidence is of course incontrovertible proof of the presence of multiple pregnancy but it would not be done unless one suspected the presence of twins or triplets. As a matter of fact the recognition of plural pregnancy is not of great importance. The only time it is of serious import is in the case of slight pelvic deformity when you are considering induction of labour. The small size of foetuses in twin pregnancies would obviate the necessity of inducing labour.

Presentations:

Twins present in this order of frequency:

Head and Head 38.5%.

Head and Breech 21.1%.
Breech then Head 14.3%.
Breech then Breech 10.7%.

Management of Labour:

Having excluded the presence of polyhydramnios and other conditions, one must prepare for an early delivery since labour tends to be premature. Though the labour may be prolonged it will be but little disturbed. The cord of the first child is tied with a double ligature as soon as it is born. There follows an interval of 30-60 minutes which can be shortened by rupturing the membranes of the second child, which also ensures good presentation. Difficulties will be encountered where the first child is a breech but owing to the small size extraction is generally easy. Where the child is malpresented, the membranes should be ruptured and the presentation corrected. Probably the difficulty that is most stressed in obstetrical text-books is the matter of "locked twins." Fortunately this is quite rare. It consists in the impaction of the two heads in the pelvis so that neither foetus can progress up or down. It may occur in two ways, either (1) with the body of one child in the false pelvis and the body of the other in the open air, or (2) with both bodies in the false pelvis but with one higher up than the other. To treat either variety one first tries to push the second head back out of the pelvis. If this is unsuccessful, recourse must be had to decapitation of the first child.

Complications:

Because of the great bulk in her abdomen the mother complains of shortness of breath during pregnancy. Pressure on the intestines makes peristalsis difficult while the occurrence of pyelitis is greater due to pelvic congestion and pressure on the ureter. Any tendency toward prolapse is exaggerated by having twins or triplets. Eclampsia is more common. Polyhydramnios is very apt to occur especially in uniovular twins in which case it occurs in the amniotic cavity of one of them. The foetus in this sac is born with enlarged heart and kidneys.

Complications post-partum include shock and haemorrhage; these must be treated as in ordinary pregnancies, with warmth, stimulants, injections of normal saline, and transfusions of whole blood. The use of pituitrin will be found invaluable, in doses of ½c.c. Sepsis is a not infrequent complication. Avoid it by rigid asepsis and paucity of examinations. When genital tract infections do occur and the causautive agent is found to be a streptococcus, the use of Prontolyn, gr. 60 per diem is of unquestionable value.

NOTE: Copies of the Extensive Bibliography used in preparing this paper may be obtained on request from the author.

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THE PROBLEM OF MENTAL DEFICIENCY

By ALFRED AUERBACK, '38.

The problem of mental deficiency is becoming more and more the subject of public attention. As the public looks to the medical profession for direction it is essential that doctors themselves have a proper understanding of the situation. It must be remembered that there are two classes of mental cases — the mentally defective and the mentally ill. In this discussion we are dealing with *mental defectives* — those individuals in whom there is a condition of arrested or incomplete development of mind, whether arising from inherent causes or from disease or injury, such that they require care, supervision and control for their own protection and welfare and for the protection of others. On the contrary, the *mentally ill* are those people who although born with a normal intellectual attainment have at some time become ill and so incapable of getting along in society.

What is the actual extent of the problem as applied to Ontario? According to Dr. McGhie, the Deputy Minister of Health,[1] a series of careful surveys show that there are between 60,000 and 70,000 mental defectives living in Ontario today. Of these only 2,000 are in institutions and less than 5,000 others have been identified in the community. That is, at least 90% of the mental defectives in the province are able to carry along in the community without even being recognized as such either by institutional authorities or by social agencies. Thus it can be seen that being mentally defective does not render an individual an incompetent member of society.

Such being the case, wherein do mental defectives constitute a problem? This may be discussed under a number of headings:—

(i) *Unemployment*—under adequate supervision mentally defectives are competent manual labourers, and as such fill a vital role in industry. In monotonous jobs a mental defective does not tire as easily as more intellectual workmen and so has less accidents. However, he is essentially an unskilled labourer working for small wages. In times of depression or during periods of seasonal slack he is the first to be discharged, and so cast back on public charity.

(ii) *Poverty*—since the mental defective draws only a small remuneration he and his family live in impoverished circumstances, increased when he loses his job. They constitute a large percentage of those requiring relief and drawing on charitable organizations for help.

(iii) *Vagrancy and inebriety*—mental defectives in themselves are no more liable to these than normal people. However, they have not the intellectual capacity and judgment of normal individuals. Consequently, if they ever are involved in either through force of circumstances, they are less able to recover from such a condition.

(iv) *Venereal disease*, illegitimacy and promiscuity—these too are pitfalls not peculiar to mental defectives. Here again their mental shortcoming constitutes a barrier to recovery. A mental defective with venereal disease does not appreciate the importance of treatment, and is a serious source of infection.

(v) *Propagation*—this is the point on which proponents for sterilization base their arguments. They maintain that mental defectives tend to produce numerous offsprings, most of whom are themselves mentally defective. This is the common lay belief. Is it really the situation?

The definition of mental deficiency states that it may arise through hereditary cause or due to *injury* or *disease*. That is, an individual, usually a child, may be born of normal or even highly intellectual parents and be normal in intellectual ability, yet an attack of disease, such as meningitis, encephali-

tis, measles or a similar infection may render him mentally deficient. It can be clearly seen that even if all mental defectives were sterilized, so that they would be unable to propagate, there would still be mental defectives in society. If we consider the premise that mental defectives reproduce only mental defective children, we see that this cannot be true. The group whose mental deficiency results from injury or disease should not necessarily have mentally defective children.

It is difficult to say whether or not mental defect is on the increase, but the proportion of defectives alive today is greater than it was a generation ago.

"In a recent extensive scientific investigation of this whole question, it was conclusively demonstrated that the families in which mental defectives occur are *not* larger than the average for the general population; that mental defectives themselves have much *less* than the average number of children; that for mental defectives the birth rate is lower, the marriage rate is lower and death rate is higher than for the general population. There is no valid evidence for supposing that mental defect is increasing in frequency and there are no grounds for sensational alarm concerning the salvation of the race in respect to the subnormal."[2]

Present Knowledge of the Cause of Mental Defect[3]

1. In many cases of mental defect there exists in the family some form of mental abnormality. In the majority of such cases there is evidence of heredity, but the mode of transmission is unknown.

2. In a few rare forms of defect the fact of heredity and mode of transmission are both known.

3. It is probable that some mental defect is due to a combination of heredity and environmental factors.

4. Mental defect acquired after birth is not transmissible to subsequent generations.

5. Low grade mental defect is more frequently associated with environmental factors than is high grade, and it appears to be fairly equally distributed in all classes of society.

6. There is some evidence that conditions of intra-uterine life may produce mental defect.

7. High grade mental defect occurs more often in the lowest stratum of society. There is evidence that in the poorest districts neighbour marries neighbour, and like marries like.

8. There is no evidence that parental alcoholism causes any appreciable amount of mental defect.

9. There is no causal connection between tuberculosis and mental defect.

10. Syphilis is responsible for some mental defect.

11. It is not possible in the present state of our knowledge about causes of mental defect to forecast with certainty whether the child of any given union will show mental abnormalities. It can be shown that children of parents, one or both of whom are mentally defective, are on the average below normal, and that one-third of the surviving children are likely to be defective and more than two-fifths show some mental abnormality.

It is recognized that heredity is an important factor in the cause of mental defect and disorder. How these conditions are transmitted is uncertain. Some experts hold to the Mendelain theory while others, recognizing that this theory may explain certain types, think that it cannot account for the transmission of all.

Proposed Solutions

1. SEGREGATION:

This would seem to be an ideal way of handling mental defectives, simply removing them from society and confining them to institutions. The economic impossibility lies in the fact that maintenance alone for the mentally defective in Ontario would require fifteen million dollars annually plus the capital expenditure incurred in building the hospitals and detention homes. Dis-

regarding economics for the moment it must be remembered that all the mentally defective in Ontario do not require institutional care and segregation. There are a number of cases who, due to vicious characteristics, are best removed from the community. Also there are those who are so feebleminded that they are utterly unable to get along in any manner in the community. These also should be segregated. Other than for these categories, which constitute a very small percentage, a plan of segregation of mentally defectives is impracticable.

2. TRAINING AND SUPERVISION:

This method of dealing with mental defectives suggests itself. It must be remembered that almost every mental defective may be trained or even educated to a certain extent. We must strive to train every individual case to the limit of his or her intellectual capacity. This training may be carried on in the home and the school or in some cases may require institutionalization.

Perhaps the most important means of training is in the home. Here in a sympathetic environment the mental defective finds patient and understanding guidance. Parents will be given advice and assistance from visiting nurses or teachers of auxiliary classes. In addition, they may obtain information and methods of training from the Ontario Hospital. Education in simple tasks and some training in a social sense may be given the defective child. However, at times, economic conditions prohibit maintenance of a child at home, or the presence of an uncontrollable defective in the home may cause an upset in the running of the household. If there are younger children at home, they may tend to mimic or otherwise bait their unfortunate brother or sister. In the presence of these or comparable conditions in an individual case, home training is an impossibility and institutional training must be substituted. In the vast majority of cases home training of the mental defective is possible and when supplemented by school or auxiliary class education is by far the best training possible.

When home training is not possible, some substitute must be found. In Ontario there are a number of methods whereby this training is carried on. At Orillia is the Ontario Hospital caring for 2,000 mental defectives. Children under sixteen may be admitted to the hospital where they are educated as far as possible, and taught some trade or occupation, so that on their return to the community they will be able to find a place in society. Shoemaking, carpentry, farm work are some trades taught. With only accommodation for a limited number of inmates there is, of necessity, a large waiting list of mental defectives who would benefit under the training of this institution.

However, in the city of Toronto and elsewhere in the province there are auxiliary classes for these children. Here, in classes never over twenty in number, they are taught school work, but at a slower rate than in ordinary public schools. The work is more practical and border-line cases are helped, so that in some cases they may be able to re-enter school. There are also vocational schools, such as those in Toronto where occupational training is given, such that boys and girls when they leave the school have already learned a trade.

Supervision of the mental defective when he leaves Orillia or other mental hospital, and returns to the community, constitutes a serious problem. The hospital has supervision for only six months, but may extend it another six months if it is felt necessary. However, many mental defectives really require supervision even after this period. Working for an unsympathetic employer, he may readily be imposed on and otherwise exploited. Again, since he lives among a poor class of people, he may become the innocent tool of criminals. Once the mental defective makes an anti-social step he will have great difficulty in re-establishing him-

self in the community. The mental defectives in prison constitute a large percentage, not because such a large percentage of mental defectives are criminal by nature, but because being low mentally they are more easily caught by the police. Again the apparently large percentage of mentally defective delinquents may be explained on a similar basis. Under such circumstances supervision of some interested party or agency should be available to guide the mental defective and protect his interests. At present there is no agency available. If a law were passed permitting the staff of the mental hospital to have supervision of any individual patient as long as it was felt necessary after he left hospital, much of the present anti-social conduct on the part of mental defectives would be prevented. The opposition to this law lies in the fact that it would appear to be an infringement on the right of the individual to lead his own life. However, this measure would not apply to every patient, but only to those whom in the opinion of the hospital superintendent required such supervision. It must be remembered that the hospital superintendent has a duty and obligation to protect the public as well as the patient. Consequently, if he should feel that any patient leaving his hospital requires supervision, either for the patient's own sake or for the protection of the public, he should have the authority to impose such supervision. Under this control the delinquencies and crimes perpetuated by mentally defective individuals would be materially reduced. The public blames mental defectives in general for the offences of only a small number, when, on the whole, they are no more anti-social than average citizens.

In connection with supervision the colony plan suggests itself. In Toronto there are two homes run by a private philanthropic group caring for about thirty mentally defective girls. Some girls, when they leave Orillia after a course of training in domestic work, board at these colony homes under the care of the matron. They go into domestic work and either sleep at the colony or report there each week. In nearly every case the girls get along exceedingly well under this form of supervision. A broad system of this type financed by philanthropic groups would afford a most successful supervision for both boys and girls when they leave the institution.

3. STERILIZATION:

In recent years there has been much talk of eugenic sterilization of mental defectives. This has been the topic of much discussion involving scientific, religious and moral issues. A clear understanding may perhaps be gained by studying the report of the Departmental Committee appointed in Great Britain, "to examine and report on the information already available regarding the hereditary transmission and other causes of mental disorder and deficiency; to consider the value of sterilization as a preventive measure, having regard to its physical, psychological and social effects, and to the experience of legislation in other countries permitting it, and to suggest what further inquiries might usefully be undertaken in this connection."[3] The report is discussed under headings—"results of sterilization" and "general conclusions."

A. *Results of Sterilization*:

(a) Psychological and physiological:

The committee has been unable to find evidence that in the case of either normal or defective persons any harmful results, either physiological or psychological, ensue upon the operation.

(b) Social results:

Among social results expected to follow would be the monetary saving by lessened institutional accommodation. The committee believed that sterilization would not greatly reduce the disparity between the number of institutional beds available and the best estimate of the number needed.

On the other hand, the committee agreed as to the disastrous results of

allowing defectives to assume ordinary responsibilities of citizenship. If mental defectives now in institutions were sterilized, only 3 to 5 per cent. of these could be safely released to the community.

Among social risks of sterilization is the danger of increased promiscuity and greater spread of venereal diseases. The committee learned that no such consequences had followed in the American states where sterilization has been practised. At the same time it is deemed unwise to assume that sterilization would in any way lessen the need for supervision and after care.

(c) Legal:

The legal position in regard to sterilization is not free from doubt. It seems to be agreed that while the legality of sterilizing a patient for necessary health reasons is not disputed, operations which are not necessary for the patient's health, but which are intended to prevent the propagation of unsound offsprings are, in the opinion of most authorities, illegal.

B. General Conclusions.

Compulsory sterilization:—Assuming that the Legislature would not compel any persons to submit to sterilization unless it could be shown beyond reasonable doubt that some, at least, of their offsprings would be mental defectives, or would develop mental disorder, the committee found that no such proof can be produced. As such, *the wisdom of compulsory sterilization is doubted.*

VOLUNTARY STERILIZATION.

There are adequate grounds for sanctioning such sterilization in the case of defectives and mentally disordered. The committee states: "We know enough to be sure that inheritance plays an important part in the cause of mental defect and disorders, and we know also that these persons are as a class unable to discharge their social and economic liabilities, or create an environment favourable to the upbringing of children. In many cases the opportunity for sterilization would be welcomed by the patients themselves."

Sterilization in Canada.

Two provinces, Alberta and British Columbia, have legal sterilization. The act for Alberta is presented here and the reader can see how the patient is protected. The act for British Columbia is practically identical with only a few minor changes and so is not shown.

In 1928 Alberta passed a Sexual Sterilization Act:

Sec. 4—When it is proposed to discharge an inmate of a mental hospital, the Medical Superintendent or other officer in charge thereof may cause such inmate to be examined by or in the presence of the board of examiners.

Sec. 5—If, upon such examination, the board is *unanimously* of opinion that the patient might safely be discharged if danger of procreation with its attendant risk of multiplication of the evil by transmission of the disability to progeny were eliminated, the board may direct in writing such surgical operation for sexual sterilization as may be specified in the written direction, and shall appoint some competent surgeon to perform the operation.

Sec. 6—*Such operation shall not be performed unless the inmate*—if, in the opinion of the board, he is capable of giving consent—*has consented thereto* or where the board is of opinion that the inmate is not capable of giving such consent, the husband or wife of the inmate or parent or guardian of inmate if he is unmarried has consented thereto, or where the inmate has no husband, wife, parent or guardian resident in the province, the Minister of Health has consented thereto.

The opponents of sterilization propound the view that it is opposed to religious beliefs, that it de-sexes, that it impairs the health of the individual.

The fallacy of these arguments is obvious. If sterilization is contrary to the religious beliefs of the individual,

that person has only to refuse and he *cannot be sterilized*. As far as its effect on sex or health of the individual is concerned, it is nil or even beneficial. Sterilization is an operation that in no way interferes with sexual function beyond the fact that there can be no procreation. In many cases the mother's health is such that further pregnancy may be fatal, and sterilization is a distinct asset.

The argument that the passage of a sterilization law will result in mass sterilization of mental patients is refuted by examination of Alberta figures. In six years, 1929-1935, only 722 cases (342 male, 380 female) were presented to the Eugenics Board. Of these, only 395 operations (127 male, 268 female) have been performed.

An idea may be gained by considering the report for the year 1931-32:

	M.	F.	Total
No. of cases presented to Board	39	123	162
No. of cases approved by Board	37	119	156
No. of operations	17	79	96
Results of 56 follow-ups:			
Improved mentally, physically and with satisfactory adjustment..	2	19	21
Physically well, no mental change	6	18	24
Fair physically and fair mentally		7	7
Promiscuous		4	4

Summary.

1. Subject to proposed safeguards voluntary sterilization should be legalized in a person who is mentally defective, or who has had mental disorder.

2. Before sterilization is approved in case of a mental defective, care should be taken to test his fitness for community care.

3. Mental defectives who have been sterilized should receive adequate supervision.

4. The operation should be performed under written authority of Minister of Health after following a definite safeguarding procedure.

Conclusions.

We must appreciate the fact that there are and always will be mental defectives in our society. The actual number of mental defectives is greater than it was years ago. This does not mean that there is an increase in number. On the contrary, it indicates that we are now more conscious of their presence, and with better diagnostic methods can more readily detect cases. Contrary to lay belief, mental defectives do not tend to propagate large families.

Segregation for all mental defectives is impossible, both from the monetary aspect and from the standpoint that 95% of the mental defectives in the community have not been recognized. Some cases are best treated in this manner but they are a minority. Training and supervision at home provides the most satisfactory method of managing these individuals. If home training is impossible, or not satisfactory, institutional training may be provided. This is an excellent means whereby the mental defective is equipped to the fullest possible extent to take his part in the community. However, its weakness lies in the lack of supervision once the patient leaves the institution.

Segregation or training as methods of managing mental defectives, while satisfactory for most mental defectives, do not meet every case. On occasion we feel there is something lacking in our armentarium. Legalization of sterilization would fill this lack. By this we do not suggest compulsory sterilization, because this is far too dangerous a weapon even in the hands of the most impartial board or jury.

Legalization of voluntary sterilization is a necessity and, consequently, we must look forward to the day when such is in force. To-day sterilization is not permissible unless it is necessary for physical reasons. If a doctor feels that another pregnancy is a danger to

the life of his patient, he may recommend sterilization. Not even when the patient wishes to be sterilized can it legally be performed except in this or similar types of cases where life is endangered. No matter how great the social, moral or economic reasons in any individual case, sterilization cannot be performed. However, we may hope that some day Ontario will have a law similar to that of Alberta, protecting as it does both the patient and the public by utilizing the safeguards mentioned earlier.

While we will always have mental defectives in society, this does not mean that they individually represent a problem. Probably 90-95% will never be recognized and will go through life doing their part in the community. When we recognize them, it is due to their having run into a difficulty. We must recognize and then correct the difficulty or obstacle in each individual case, and with training and supervision set them on their way again. When this method fails, we will still have segregation or sterilization as a means to keep them to their proper status and relationship in society

The author wishes to thank Dr. E. P. Lewis for his kind assistance in the preparation of this article.

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Medical Society Notes

By W. K. KERR

The open meeting of the Medical Society, while only moderately successful from the point of view of attendance, dealt with a topic of great interest to the medical students as such, and as future medical practitioners in Ontario. Mr. Jewell, the chairman, is to be complimented for inducing Dr. J. A. Hannah to speak on the subject of Medical Economics. Those who did not attend the meeting may read a report of the address at the end of this article. All the students should consider well Dr. Hannah's suggestion of a group health insurance for medical students. This is a matter which will be presented more fully in the near future.

* * *

It has been brought to our attention that some students failed to receive their copy of the Journal of the Association of Medical Students; those who for any reason should be omitted when the journals are distributed may obtain such by applying at the Medical Office.

Under the capable direction of Cam Gray the plans for the biggest and best Med-at-Home to date are hastily nearing their completion. Duke Ellington's swing orchestra has been contracted for the evening; the Royal York Hotel convention ball room will this year be used for dancing only, the supper being served in adjoining rooms. The number of tickets to be sold has been limited, and students are advised to reserve them early and avoid disappointment.

MEDICAL ECONOMICS.

Address by J. A. Hannah, B.A., M.D., C.M.Qu., to the first open meeting of the Medical Society, December 8, 1937.

Dr. Hannah introduced his subject by stressing that the economic situation in medical practice is a problem. The difficulty may be attributed to the fact that individuals are faced with unforeseen and unbudgetable medical attention. The increasing costs of medical

care with modern methods of treatment have not helped the situation.

The basic problems then are firstly to provide a system which will assure the best medical attention to all. Secondly there must be confidence between patient and doctor. Consequently the patient must be able to choose his own doctor and vice versa, the doctor must retain the privilege of choosing his clientele.

There are three main approaches to the problems. The one at present in existence is the commercial one with the profit motif as its mainspring. A private company insures the individual against sickness and pays the doctors' bills. Here are three conflicting groups; patient, doctor and company, each with the same pressing motive of making, saving or getting something for money paid or services rendered. This system opens up a large number of possibilities for abuse and leaves little consideration for good medical practice. The commercial approach is therefore out of the question.

State medicine is another system already tried in certain parts of the world. The difficulty here is the high cost of any governmental project. Also the problems faced by a government commission are too great for their time and ability.

Thirdly there is the co-operative system. It must be remembered that the population in Canada is less dense and much richer than the population of European countries. A co-operative system is therefore not as easy to bring about and is not called for as early in Canada. In European countries various forms of state medicine have been in existence for a number of years. Bismark in 1883 first introduced it into Germany. France changed her previous voluntary system to compulsory state medicine in 1928. Great Britain saw it first in 1911, and most other European countries now enjoy the benefits or the disadvantages of their respective systems. The first co-operative plan was put into operation in Denmark. This was at first voluntary and of a private nature; but when the government became aware of its success, they made it obligatory for indigents, and others who did not join it were disenfranchised. At present this system provides for its members the best medical services available in the country.

In Canada the most noteworthy development to date, is the government scheme which was passed in British Columbia. This has been the source of much bitter struggle, the plan being unsatisfactory for industrial workers and highly unacceptable to the profession. The Ontario Medical Association has studied the problems of medical economics since 1933 and in 1936 an insurance committee was appointed. In the meantime it was discovered that the Ontario Civil Service was approaching insurance companies in order to solve its problems of high medical expenses. Dr. Hannah suggested that they use a co-operative method instead, and to this the O.M.A. and the Academy of Medicine agreed to lend their assistance. Thus an amalgamation of the efforts of the O.M.A. and the Civil Service came about and resulted in the formation of the Associated Medical Services Incorporated. A subcommittee composed of three doctors and two laymen were instructed to form a constitution with by-laws and present this to the O.M.A., also to make an estimate of the costs of medical care, plan for provision of money, and apply for a charter from the provincial government. The approval of the organized profession having been obtained, the newly formed organization commenced operation on June 1st, 1937, and has now completed six months of successful service.

Ten per cent. of the premiums are used for administration, the remaining 90 per cent. being used to pay for medical care. The subscriber must submit to a two months' waiting period after application and before the service is available. This is done in order that the organization may build up a reserve. Past illnesses or illnesses of a chronic nature are, of course, exempt.

Out of the first 500 accounts only one has had to be cancelled, which shows that a good class of subscribers are being obtained.

The benefits rendered are:

1. The services of practising physicians at home, office or hospital.

2. Surgical treatment.

3. Semi-private hospital accommodation or an amount not to exceed $3.50 per day toward the cost of hospitalization in an approved hospital.

4. All necessary nursing.

5. Obstetrics in cases where the subscriber has paid dues for ten consecutive months previous to confinement.

Remuneration of physicians and surgeons is as scheduled by the O.M.A.

The costs of medical attention were estimated on a basis of study of European and American statistics, as follows:

Item.	Estimated attention required per person per year	Estimated cost.
Home calls....	1	$3.00
Office calls....	1.5	2.00
Surgery	.08	4.00
Consultation...		4.00
Hospital	1.3 days	4.55
Nursing	.5 days	2.50
X-ray and lab...		1.00
Overhead.....		2.00
Total cost per person per year.		$23.05

Based on these estimations the following subscription costs were decided upon:

Subscriber .....$2.00 per month
1st dependent .....$1.75 per month
2nd dependent .....$1.50 per month
3rd dependent .....$1.25 per month
4th and each subsequent dependent...$1.00 per month

For an average-sized family of four the cost would be $73.00 per year. This is less than the amount spent by such a family for smokes, cosmetics, or confectionery annually. The advantages of such a system are obvious.

Medical Athletics

By W. B. CHARLES

Athletic activities for the undergraduate are now in full swing and the opportunities for participation are many. Hockey, basketball, baseball and waterpolo practices and games will begin immediately after the Christmas holidays and as many as possible are urged to turn out. In addition, the medical indoor track club is now well established and will welcome any new members.

It is hoped that by the time this article is read a squash tournament for medical students will be well under way. The present fourth year are donating a trophy to be known as the James Kinnear Memorial Trophy, in memory of their classmate who died last year. This trophy will be competed for annually and each winner in addition to having his name inscribed on the trophy will receive a medal for his permanent possession.

Our vigorous Secretary-Treasurer has recently drawn our attention to three rather ancient pieces of silverware which have adorned the shelves of the medical office for these many years. It appears that these cups were formerly awarded for inter-year competition in hockey, basketball and baseball. One of the cups was donated by Dr. Smirle Lawson. For some unknown reason these trophies have not been competed for regularly since the end of the war. The latest date on any of them is 1922.

Why this rather desirable form of undergraduate activity was abandoned is not quite clear but it is our opinion that the renewal of such interyear competition might go a long way to revive some of the faculty spirit which, as is only too apparent, has lain dormant for some years past. At present, Daffydil is the only event which brings the years into intimate association. Therefore, early in January, the Medical Athletic Asso-

ciation plans to organize interyear tournaments in baseball, basketball and perhaps hockey. These games will be played in Hart House probably on Saturday afternoons. An interested student in each year will be responsible for having a team out at the appointed time. These games will not consume a great deal of time, for one defeat will eliminate that year and the maximum number of games played by each year will be three.

Everyone in the year will be eligible for these teams but we do hope to attract some who are not already members of interfaculty teams. The object is to stimulate some faculty spirit by means of a little rivalry between the years and to have some good fun together.

Feature Section

A SUMMER'S SAILING.

By E. G. Meyer, '38.

The field course in Hygiene had no sooner started than I received a telegram ordering me to join the steamer at Sarnia as soon as the course was over. Many years ago I had sailed up the Great Lakes as a passenger on the sister ship and now I was to join the flagship as a member of its crew. True enough the bellhop's salary would make me blush to mention its amount but the opportunities for making tips were golden, besides it would be the last holiday for some years.

It was a dull, drab, foggy morning when I first saw her looming out of the fog, her white superstructure glistening and her raucous fog horn booming defiance, the flagship of the fleet. I was led down a maze of corridors and companionways to a small room on the spar deck aft and was told that here I was to room for the rest of the summer along with nine other fellows, all undergraduates of the various Ontario Universities.

I had made up my mind to forget my future profession for the summer and to make some money but I had no sooner reported when I was asked if I knew a little first aid work and before thinking I replied I did. Promptly I was busy. The first day there were a dozen minor injuries to attend to and it looked as though it was going to be a busy summer, which indeed it turned out to be.

On our first trip up the lakes we carried a convention from Cleveland which turned out to be a riot of fun from start to finish. For this convention a temporary hospital was set up and two of the delegates were in charge. A day and night emergency shift operated and well it did, for there were cuts, bruises, broken arms in rapid succession. One of the members of the crew developed what I believed to be Angioneurotic Oedema. Both surgeons in charge wanted to incise for drainage. I beat them to it, put his arm in a sling, administered a few minims of Adrenalin and the result was almost miraculous. In a few hours the arm was down to normal size. We were in the Thousand Islands at the time, so the lad slipped over to hospital at Kingston. He came back and confirmed the diagnosis. The "Doc's" reputation was made.

The whole summer certainly provided a rapid panorama of experiences. An interesting accident occurred. A steel door hinged at the top swung shut on a wheelman's ankle, producing a typical Potts fracture. Here was a new way in which a Potts fracture could be produced. In the way of fractures there were various ones; Colles were common, Supracondylars

rare, there was only one of the latter. There were sprains galore.

Among the crew and passengers there were numerous burns. Not a day passed without a burn reporting for treatment. For superficial burns a mild analgesic ointment containing 1% novacaine was successfully used. This was most excellent for the sunburns that reported. Care was used, however, not to use too much for fear of absorption. For burns with blistering, tannic acid was used, also tannic acid in jelly. The latter produced a fairly excellent tan with minimum of scarring, although it required many more applications to produce a heavy tan. The kitchen was the most prolific source of burns. The Chinese chefs had a habit of wearing light straw sandals and they suffered frequent burns on their feet. I was called up to see one of them who had a burn over the plantar surface of his foot. He had produced a thick, hard, black tan over the sole with the aid of tea compresses.

Shore leave was a real event in the lives of the crew. We would no sooner have the stern line out than the waiters, dressed like fashion plates, would jump from the after freight deck to the dock and hike up town to the various refreshment places. There were certainly some very obnoxious places around the docks in Detroit where these chaps would go to quench a week's thirst. Cases of Trench mouth did turn up for treatment and vigorous applications of Bowman's Solution usually resulted in a cure before we arrived at home port for Medical Inspection. Those that did develop it were compelled to keep all their eating utensils separate from the rest and these were treated with boiling steam for 1 hour.

During the hot weather it was remarkable the amount of salt that the stokers, oilers and water tenders put on their food with the result there was not one case of collapse. It was interesting that the stokers did not develop the callouses on their hands as did the deckhands and even the bellhops. It may have been in the method they used for firing.

Every time the boat train arrived at Sarnia from Toronto with its load of passengers I had visions that probably at least one child might develop Poliomyelitis, but the season passed with none to our knowledge. A careful history usually revealed when a youngster took ill that he had either started at the top of the menu and worked down or at the bottom and worked up. No doubt my predecessor had foreseen this for when I took possession of the "dispensary," there were in it 4 bottles of castor oil and not much else!

The company doctors at the various ports were the finest group of fellows that one would wish to know. Most of them were graduates of Toronto. It was their duty to check the health of the members of the crew. This was done at monthly intervals. Each week, samples were taken of the water supply and contents examined. The system consisted of a rapid sand filter, chlorinator, and final treatment with ultra violet light.

All went well until the end of July when one night I was rudely awakened by the Special Officer who wanted me to come up and see a man with a urinary obstruction. I checked the kit carefully and found there was no catheter. However, the passenger had one. He had had this trouble before and carried one with him. I thought that everything would be all right. I sterilized the catheter and scrubbed up. The catheter went in fine but no results. I began to perspire. Was it in the bladder? Yes, I could feel it pass the sphincter. Here was a dilemma, 250 miles from port, the catheter would not work, the radio could not raise port and there was no senior to turn to. Suddenly it dawned on me that the catheter was so soft that every time he started to exert pressure it would collapse. With the aid of the Chief Engineer I found some thin copper wire. I boiled this up, twisted it so as to form a frame and inserted this into

the catheter. The catheter was passed and my efforts were immediately rewarded. Believe me there was a requisition for a new catheter the next time in port.

Things went fine till one day in Duluth I lost my appendix. It was either return home or accept another job. So I was made baggageman, after being in hospital for one week. I had a crew of sailors to do the lifting and I did the clerical work.

There must have been a Jonah on board this summer, for there were 5 acute appendicitis cases. One day while at Fort William, one of the passengers developed typical signs of acute appendix. By the time he called me we were out in the lake and headed for Port Arthur, a distance of 5 miles. A fog had blown up and when we reached the breakwater the skipper refused to enter because of the narrow width of the gap. There we were outside the harbor, "blowing fog," and a congressman with an acute appendix. The fog continued and the man became worse. Finally a radio message was sent ashore and a tug came out and guided the ship in through the narrow gap. Believe me I certainly grew a few grey hairs that day.

Then one day I was made Assist. Purser complete with gold stripes. That seemed to break the Jonah for from then on things were fairly quiet. But it did not last. Then came a rapid series of Acute Cholecystitis, Carcinoma of the Bladder, Trench Mouth, Ringworm, Scabies and Boils, and so on down the list.

But what a summer. We worked hard and long, ate like lumberjacks and piled on the weight. The crew were not all college men but every last one of them would give you "the shirt off his back" if you were in difficulty. Finally after a banner season for passengers and freight we tied up at Sarnia, having travelled over 18,000 miles in the course of three months.

When I saw my ship for the last time she looked a worn and weary veteran with her plates flecked with rust and scratched by contact with docks from Sarnia to Duluth. Next spring while we are cramming for exams she will be sailing up Thunder Bay, early in the morning with the golden sunlight crowning the head of Sleeping Giant and the Welcome Islands a purple haze in the distance!

RIDING MOUNTAIN TRAILS.

By Miss C. M. Horner, '39.

Have you ever gone speeding west towards the Rockies, knowing that you were to meet a party of young trail riders but with only a vague idea of just when and where you were to see them? That happened to our party of eight, consisting of three young alumnae of this University, a girl from Scotland, myself, two High School boys, and Dr. Doidge, who was formerly of the Toronto General Hospital and is now practising in the Peace River District. The trail riders were boys of high school age who, under the expert leadership of Nicholas Ignatieff, planned to explore the great Northwest. Their adventures consisted of a pack horse trip 250 miles across the Rockies in a south-west direction from Wembly in the Peace River District to Bend, B.C., and then by boat down the Finley and Peace Rivers. Arrangements had been made for us to meet them and return across the mountains with the horses to Wembly. We had been told to meet at Snowshoe unless otherwise notified, but upon arriving at this little lumbering town on the Fraser River, 150 miles west of Jasper, there were no trail riders to greet us and we knew we could not get in touch with them. We camped near there for six days before receiving word that they had arrived at Bend, 25 miles down the river. However, we had made good use of our time exploring the country, learning how to pan gold, and listening to the tales of the old prospectors.

Learning of their whereabouts, we caught the local freight for Bend.

There we were welcomed by men wearing ten gallon hats, chaps, and bright bandanas. It wasn't long before we met the seventy-two horses which were to return with us. It seemed that they were all sizes and colours, making rather an alarming array.

Looking after our party were the thirteen men who had come across the Rockies with the boys. There was the outfitter whose job it was to hire enough saddle and pack horses for the party, to hire the services of competent guides and wranglers or cowboys and to look after the food and the trip in general. Then there were three Indian guides on whom lay most of the responsibility of directing the party over the trails which were either existing, or of a necessity cleared at the time. The cook, of course, was a most important member of the outfit and his cheery "Come and get it, folks," was a most welcome call. The rest of the outfit consisted of eight wranglers. These boys were an interesting, carefree lot, full of exciting stories of horses, dogs and wild animals. They looked after the horses, rounded them up in the morning, packed them and were each responsible for seeing that certain horses did not wander off the trail during the day.

The horses were a motley herd. They were for the most part sure-footed mountain and cow ponies who took great pleasure in swimming the rushing mountain streams. There were four colts about four months old with us. They were brought along for two reasons, i.e., they wished to pack the mares and also the colts tend to keep the herd together at night. The colts stood the trip remarkably well and in some places found it easier going than the larger horses. After the day's trip was over the horses were all turned loose to go where they wished. A few of the leaders had bells but there was no attempt to tie or hobble them. As the horses neared home, they sensed this fact and would start down the trail about three in the morning, but the wranglers were on their toes and herded them back to camp. During the day the horses were not led but followed in single file along the trail, usually without any trouble.

The day began with breakfast at seven. Of course, you must not forget that the cook and wranglers arose around 5.30, for there was much for them to do. After breakfast, while the wranglers were packing the tents and food in the panniers or saddle bags, it was our duty to pack our dunnages, wash the dishes and make sandwich lunches for twenty-one. The staple food of all meals was 'bannock' and our noon meal consisted of two large bannock sandwiches, raisins and chocolate. By this time the horses had been rounded up, brought into camp and everything packed. We assisted the wranglers as best we could with the loading of the pack horses and, of course, were responsible for the saddling of our own ponies. Then everything ready, we mounted and with Adam, the head guide in the lead, started single file down the trail. We usually broke camp about ten o'clock.

We would ride steadily all morning, stopping only occasionally to look at some animal tracks or to eat some berries. We found the most comfortable method of travelling was to alternate riding with walking and leading the horses. In many cases the latter was quite necessary. We found the best way to climb steep hills was to hang on to the horse's tail, and of going down steep hills, to let the horse slide first. The trail was always interesting. We crossed mud holes, muskeg, looked for fords by which to cross rivers and experienced the thrill of feeling the ice-cold waters running swiftly against us as we headed our horses upstream.

We usually dismounted beside a river for lunch. Sometimes, however, we had a long way to travel and then it was necessary to eat while riding, stopping only for a minute at some stream for a drink. We made camp about five o'clock in the evening, and by the time the horses were unpacked and turned loose, dinner was well under way. We helped put up the tents and tarpaulins, got dinner and after-

wards washed the dishes. Then came one of the nicest times of the day, as we all sat around the fire. The cowboys told stories, sang and yodelled and discussed the day's ride while in the distance we could hear the rushing streams, the wind in the trees and the tinkle of the horses' bells. We would then roll up in our sleeping bags, for we were tired after a day's ride in the exhilarating air.

We were on the trail for sixteen days, on twelve of which we had rain. We averaged about eighteen miles a day and covered two hundred and fifty miles altogether. We returned by a different route to that taken by the boys' party because they said it was too difficult. But it turned out that we went over trail that was worse in spots than theirs and that we had to cut fifty miles through bush. This part of the country had not been travelled except by trappers for at least ten years, which meant that the old trail was covered by new growth and windfall. Trail cutters would leave camp at seven a.m. with a horse and axes and walk the whole distance, clearing out the old path or forming a new one. One day we climbed two thousand five hundred feet up to the divide, only to find we were following a blind trail and had to descend again. However, we were all glad—except for the trail cutters—for the view from timber line was one never to be forgotten. For most of the trip we followed rivers—the McGregor and then one of its tributaries, Jarvis Creek. We followed the Jarvis to its source—a beautiful lake hidden among mountains on the divide—at an altitude of six thousand feet. A day's ride from here we came to the British Columbia-Alberta boundary. Here a very marked change in the character of the country was noted.

British Columbia mountains were high, rugged and with immense snow fields forming glaciers which came down within easy climbing distance. The rivers were swift and cold and there were many small mountain streams. The forest consisted of big cedars and cottonwoods with dense underbrush. The "devil's club" was an interesting plant and yet a sore subject. It grew to the height of five feet with leaves much like immense maple leaves. The stalk, stems and under surface of the leaves were covered with poison prickles, contact with which made a very painful lesion. There was also the "poison plant," the real name of which was unknown to the men. It had wide leaves of the orchid type, and grew to the height of three feet. If horses eat this, as five of ours did, they become very sick, and may die. We had to leave one horse behind because she was too ill to follow.

Alberta is characterised by rolling, rocky mountains with no sharp jagged peaks or snow fields. These are the home of the grizzly bears. There are large, rolling mountain meadows with tall, waving grasses. The trails lead over jack pine ridges—jack pine and willow were the main trees along the way. There was very little underbrush in this part of the country—but there were lots of hornets!

Many exciting things happened on the trip. We had two stampedes during which packs were flying in all directions—and so were we. One horse was roped by his front legs, and landed in such a way that he broke his back and had to be destroyed. Another day a horse caught his hind leg between two logs and it was all the boys could do to free him. Then too, there were the horses that rolled down banks with their packs on, and those that persisted in swimming the rivers, getting our bed rolls wet. Because of the rain the rivers became very swollen. One night Jarvis Creek rose three feet and we were forced to remain in camp a day till the waters subsided. It was on days like these, when we crossed the main river fifteen times in six miles, that the colts had trouble. We almost lost them for they were helpless against the force of the water. It was pitiful to see them plunging against the current, but continually losing ground. They would whinny to their mothers who

would answer, and it was all the men could do to hold the mares from going back down stream after them. However, they managed to pull them out safely. The dog that was with us was clever enough to avoid difficulties of that sort. He would run upstream so that when he climbed out on the opposite bank he would emerge at the trail. Of course, I must not forget to mention the moose that one of our party killed so that we could enjoy some fresh meat.

On a mountain meadow our party sighted seven tepees and a tent. We investigated and found a wandering tribe of Cree Indians from the Smoky mountains. Our Indians, acting as interpreters, asked them to put on a "moochigan" or Indian tea dance for us that night. Even before dinner was over we could see the light of the flickering fires in the Indian camp and hear the rhythmic beat of the tomtom. The Indian dance is very simple, yet very rhythmic, and it doesn't take one long to get into the swing of it. They have been known to keep this up for four days and nights taking off only a short time to rest. It was certainly a thrilling experience for us, especially when we beat the tomtoms ourselves. They showed us their "stick game" which is very like our "guess which hand it is in." They have sides of any number and do it all in rhythm to the tomtom. They score by putting sticks in the ground. In the morning we bought some cariboo-leg bags and whistler robes, which was a rather long proceeding, because they would never bring more than one article at a time from their camp which was one quarter of a mile away.

Eight very sad boys and girls arrived at Wembly with thirteen very glad cowboys, for they had been away six weeks. We did not feel like returning for we were learning to love the carefree life of riding the trails. However, we all went our several ways, and I know that we all hope that at some time we will be fortunate enough to return for another wonderful trip. It is a holiday that I can recommend to one and all.

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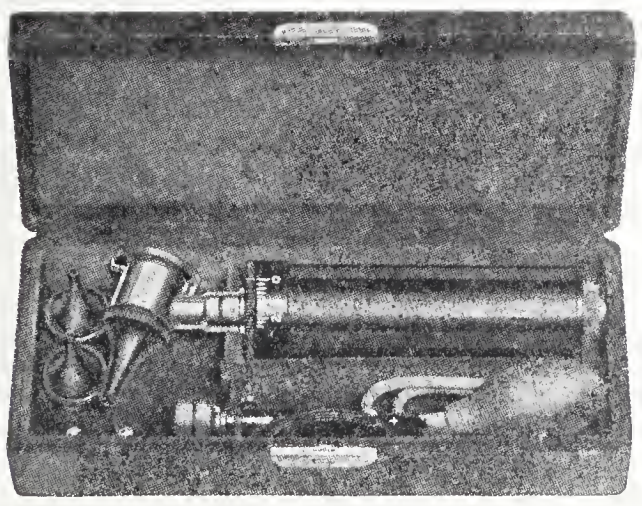

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Abstracts

THE TREATMENT OF CORONARY SCLEROSIS AND ANGINA PECTORIS BY PRODUCING A NEW BLOOD SUPPLY TO THE HEART.

By Harold Feil, M.D., *and* Claude S. Beck, M.D., Cleveland. *J.A.M.A. Vol.* 109. *No.* 22. *Nov.* 27, 1937. *p.* 1781.

This report concerns the results obtained in the treatment of coronary artery sclerosis and intractable angina by grafting vascularized tissues on the heart in an effort to directly combat cardiac ischaemia. Twenty-five cases have been done. In the later operations the approach to the heart was made from the left side of the sternum and a graft from the left pectoralis major was used. Powdered beef bone was placed on the surface of the heart to produce a low grade inflammatory reaction between the grafts and the heart. In selecting patients for operation the requirements were (1) unequivocal evidence of coronary sclerosis; (2) inability to get along on medical treatment, drugs and rest, with any degree of comfort; (3) absence of circulatory failure. All presented the classic picture of Heberden's angina of effort and emotion. Of the twenty-five patients operated on, sixteen are living. Of these, three have a result much better than expected—no pain, no drug therapy required and exercise tolerance definitely increased; nine have less severe pain (occasionally needing medication) and some increase of exercise tolerance; one shows only slight improvement. The authors feel that their results are encouraging. They point out also, that while the mortality rate in the first 12 patients was 50%, in the last 13 patients it was 15.4% and the last 9 patients have gone through the operation without mortality.

A.F.G.

THE PATHOLOGIC PHYSIOLOGY OF THE COMMON BILE DUCT.

By Walters, M.D., et al, Rochester, Minn. *J.A.M.A. Vol.* 109, *No.* 20, *Nov.* 13, 1937. *p.* 1591.

The studies which form the basis of this report were carried out in a series of surgical cases in which the common duct had been explored and drained by T tube. Intraductal pressures were measured and roentgenological investigations were made. With spontaneous attacks of pain similar to that described as biliary colic, increase in intraductal pressure occurred. The action of various drugs on the common duct, sphincter of Oddi and duodenum was studied, roentgenograms being used to visualize the effects produced. Administration of one-sixth grain of morphine in these patients (with lesions of the biliary tract) frequently produced an increase of intrabiliary pressure to from 160 to 300 mm. of water (Normal being 0-20 mm.) of two or more hours' duration accompanied by severe pain. A larger dose of morphine (and codeine and dilaudid), while decreasing central sensibility to pain, prolongs and augments the above effect, which is largely due to a spasm in the sphincter at the lower end of the duct. Amyl nitrate, glyceryl trinitrate and theophylline with ethylenediamine will completely relax the sphincteric spasm and thus produce a fall in the intraductal pressure, and a relief of the pain or discomfort caused by morphine in several of these patients. Atropine does not do this in the usual dosage.

The authors go on to suggest the use of morphine as a diagnostic procedure in the study of patients who have the post-cholecystectomy syndrome. If the administration of morphine brings on an atack of pain and glyceryl trinitrate relieves it, the evidence is in favour of the condition being the result of a disturbance in the sphincteric mechanism at the lower end of the common bile duct with or without associated stones in the duct. Administration of glyceryl trinitrate in doses of one-one hundredth grain will relieve the pain associated with post-cholecystectomy syndrome.

A.F.G.

ORAL SULPHANILAMIDE IN GONORRHEA.

By A. J. Cokkinis, M.B., B.S., F.R.C.S. *B.M.J. Nov.* 6, 1937. *p.* 905.

This article is a thorough and interesting elucidation of this controversial subject. It is somewhat detailed for summary but is recommended most highly. Here is given a slightly enlarged series of conclusions.

"(1) An intensive trial with sulphanilamide in 250 cases has proved conclusively that it is an effective remedy for gonorrhoea and most of its complications. The drug is able to produce a clinical cure in a large majority of acute and chronic cases in a week or less. There is good reason

to believe that by a rational administration extending over two or three weeks all the clinical cures can be converted into permanent ones. Unfortunately a small group of cases completely fail to respond to the treatment, but these cases may be detected, and thus suspended in treatment, early saving both drug and possible toxic effects.

"(2) Although the drug can be given conveniently by the oral route as in this series, it is emphatically not the answer to the general practitioner's or patient's prayer for a "tablet" that will cure gonorrhoea. There are various adjuncts to the administration of the drug which govern its effectiveness.

"(3) The drug is intensely toxic, and its toxicity depends not only on the amount taken but also on the period of continuous administration and on the general condition and individual tolerance of the patient. Most of the toxic effects are unimportant (anorexia, frontal headache, etc.), others temporarily distress or incapacitate the patient (nausea, vomiting, constipation, rigor, weakness, etc.), but there are some which actually endanger life (agranulocytosis, haemolytic anaemia, optic atrophy, etc.). The patient should never be given more than 60-70 gmmes. of the drug and the administration period should never exceed 21 days. Patients often develop an acquired tolerance to the minor toxic effects, and measures can be taken to prevent toxicity (administration of fluids and glucose and elimination of sulphur-containing foods) but at first sign of real danger its administration must be stopped at once.

"(4) To obtain optimum results the drug must be given in potentially toxic doses. Its administration should therefore be entrusted only to those who understand its dangers and know how to assess the toxic symptoms and signs. Facilities for periodic examination of the blood, cytological as well as spectroscopic, must be at the immediate disposal of its administrators. With such knowledge and facilities and by strict limitation of the total quantity and period of treatment the administration can be made as safe as it is efficient.

"(5) Owing to the uncertainty which must for a time prevail as to the permanence of cure, final tests must be particularly vigorous and patients should be kept under observation for a considerable period.

"(6) Finally, one would issue a warning to official quarters against the dangers that would arise from indiscriminate sale and purchase of this toxic drug once the lay public becomes thoroughly aware of its existence and effectiveness."

J.A.G.R.

ZINC SULPHATE NASAL SPRAY IN THE PROPHYLAXIS OF POLIOMYELITIS

By F. F. Tisdall, Alan Brown, R. D. Defries, M. A. Ross, A. H. Sillers. *Canadian Public Health Journal, Vol. 28, No. 11, Nov.*, 1937. *p.* 523.

An outbreak of poliomyelitis which occurred in Toronto during the months of August, September, and October, with an incidence rate of 1.1 per thousand population, afforded an opportunity for a trial of a nasal spray containing 1 per cent zinc sulphate, 1 per cent Pontocaine, and 0.5 per cent sodium chloride. In the spraying, ½ to 1 cc. of solution was introduced into each naris and the spraying was done on two occasions with an interval of approximately 12 days. The peak of the epidemic occurred during the week ending September 4. The first spraying was commenced on August 31 and completed by September 5. 5,233 children received the first spraying, indicating the success of the presentation to the public and the efficiency of the organization. The second spraying extended from September 13 to September 16 and was received by 4,713 children. A representative control group of 6,300 non-sprayed children of a similar age group was obtained.

The attack rates for the period 7 days after the first spraying to 30 days after the second spraying were 2.9 in the control group and 1.8 in the sprayed group. This difference was found not to be statistically significant. It is concluded therefore that this study furnishes no evidence of the protective value of this procedure. It is further concluded that as the spraying by this method must be conducted by oto-laryngologists or other physicians specially trained in intranasal treatment, requires special facilities, and cannot be done sufficiently quickly to meet the emergency of an outbreak, it cannot be considered a practical public-health procedure.

However, it should be pointed out that from the results of a large number of tests it would appear that not more than 25 percent of the sprayed children had anosmia. If loss of sense of smell be accepted as a criterion of the complete covering of the olfactory area with the spray, then it is apparent that the method followed did not achieve its purpose. Pentecost, in a paper published in the Canadian Public Health Journal of October 1937, reports 100 percent anosmia in a series of children in whom the zinc sulphate solution was introduced by a nasal catheter. It is quite possible that the use of this improved technique might have given a more satisfactory answer to the question of the value of zinc sulphate in the prophylaxis of poliomyelitis.

R.A.M.

FRONTAL LOBE TUMOURS: A CLINICAL AND A PHYSIOLOGICAL STUDY

By H. H. Hyland .and E. H. Botterell
C.M.A.J. Vol 37, *No.* 6, *Dec.*, 1937, *p.* 530.

A clinical analysis is presented of 30 patients with tumours involving one or both frontal lobes. The tumours consisted of 26 gliomas, 3 endotheliomas, and 1 glioma. Headaches and convulsions were the most frequent complaints. Papilloedema and facial paresis were the commonest physical findings. Emotional and mental disturbances were common but did not prove of localizing value per se. Frontal lobe tumours which are bilateral or which involve the corpus callosum are more likely to produce severe mental symptoms. Ventriculography proved essential for the correct localization of the tumour in 6 cases. In 4 of these the clinical diagnosis was tumour of the cerebellum. The other symptoms and signs of frontal lobe tumours are presented as well as a discussion of the mechanism of production and significance of these findings. Two cases are reported of striking recovery following radical extirpation of a tumour involving the frontal lobe.

R.A.M.

THE USE AND ABUSE OF ERGOT AND PITUITARY EXTRACT

By M. Edward Davis, M.D. *J.A.M.A. Vol.* 109, *No.* 20. *Nov.* 13, 1937. *p.* 1531.

An article of importance written by an eminent authority. Ergot and pituitary are the most important oxytocic drugs. Properly used they are of inestimable value in the course of labour and the puerperium, often contributing directly or indirectly to the saving of human life, while their indiscriminate use has led too frequently to disastrous results for mother and baby. Dr. Davis stresses the point that oxytocic drugs are almost never indicated during the first and second stages of labour. The use of pituitrin to speed up the course of normal labour is strongly condemned as upsetting the carefully synchronized mechanism of labour and driving the baby, perhaps in poor position forcibly through the unprepared soft tissues of the mother. In this way there is caused extensive and irreparable damage to the mother's soft tissues and pelvic floor, mechanical injury to the child in the form of intracranial haemorrhage, etc., and through tetany of the uterus interfering with placental circulation, asphyxia or death of the child. Ergot is extensively used post partum to assist involution of the uterus and fluid extract of ergot, 30 - 60 min. t.i.d. seems to be of definite value in cases of delayed involution. However, ergot extract should not be continued for longer than one week or 10 days because of the danger of ergotism.

A.F.G.

RED CELL CHARACTERISTICS IN ACHOLURIC JAUNDICE

By Janet M. Vaughan, M.D., M.R.C.P. *Journal of Pathology and Bacteriology, Nov.*, 1937. *Vol. xlv., p.* 561.

Acholuric jaundice is a familial condition in which there is an unusual degree of haemolysis constantly taking place, associated with increased fragility of the red cells. The cause of the haemolysis is either the spleen, which destroys the cells at too great a rate or an abnormality in the production of the red cells by the bone marrow, which owing to increased fragility are destroyed more easily.

This author investigated the characteristics of the red blood cells before and after splenectomy in persons afflicted with this disease. It was found that red cell fragility was invariably associated with spherocytosis of the red cells in which the cells were increased in thickness. After the splenectomy, the fragility remained as before but the spherocytosis had disappeared. The fundamental abnormality is therefore in erythropoiesis. The spleen must exert some effect on the condition of the red cells as evidenced by the spherocytosis, but as this disappears after splenectomy, it is not the fundamental abnormality present in the acholuric red cell.

W.G.R.

THE INFLUENCE OF ALLERGY ON THE EARLY DEVELOPMENT OF TUBERCULOUS LESIONS

By L. Dienes, M.D., and Tracy B. Mallory, M.D.

The tubercle is usually assumed to be a foreign body response to a relatively indestructible parasite with a high lipoid content. While it is true that tubercular lipoid material alone will produce a granulomatous reaction, the amount of lipoid in a few hundred tubercle bacilli in contrast to the amount of lipoid required to produce an equal foreign body response, makes the accepted theory inadequate. Typhoid, syphilis, brucellosis, tularaemia, lympho-granuloma inguinale and glanders are all characterized by granulomatous type of inflammatory reaction. The nearly identical reactions produced by such varied antigens as acid-fast bacilli, spirochaetes, viruses and gram-negative bacilli cannot be explained on the foreign body theory alone.

It has been generally recognised that hypersensitivity was a factor in accelerat-

ing the development of tubercles and also in the production of necrosis. These authors believed that allergy might play a part in the development of early anatomical lesions of tuberculosis.

By showing experimentally that a close parallelism exists between the times of development of hypersensitivity and the change in the tuberculous reaction from one of acute inflammation to granuloma, the authors present an argument in favour of their theory.

W.G.R.

THE EFFECTS OF ETHER, CHLOROFORM AND CYCLOPROPANE ON CARDIAC AUTOMATICITY

By Meek, W. J., Hathaway, H. R., and Orth, O. S. *J. Pharmacol. and Exper. Therap.* 61 : 240 (1937).

Cardiac irregularities in ether, chloroform and cyclopropane anaesthesia were studied under controlled and comparable conditions. The dog was used as the experimental animal because conclusions from experiments with anaesthetics on this animal may be applied to man with more certainty than those from the cat. Since, in the heart showing normal impulse production under anaesthesia, the SA node may yet be approaching an inhibition sufficient to allow escape phenomena, or ectopic centres may be on the point of exhibiting activity should an additional stimulus appear, the condition of the automatic tissues was tested by a standard injection of adrenalin. The does of adrenalin was such that in the normal animal it produced only reflex vagal inhibition of the SA node with or without escape of the AV node, bundle or ventricles, but never with tachycardia or fibrillation.

Cyclopropane, as judged by this standard dose of adrenalin, caused a greater increase in the irritability of the cardiac automatic tissues than either chloroform or ether. In ether anaesthesia a fast AV nodal rhythm commonly resulted after the injection of adrenalin. With chloroform under the same conditions there occurred ventricular extrasystoles, nodal and ventricular rhythms, and occasionally ventricular tachycardia. Cyclopropane favoured ventricular extrasystoles, AV nodal rhythms, ventricular tachycardia, and occasionally ventricular fibrillation. The increase in irritability of the automatic tissues of the heart of the dog was in any case directly proportional to the concentration of the anaesthetic.

The use of adrenalin, and presumably any other sympathomimetic drug, is contraindicated in cyclopropane and chloroform anaesthesia.

F.L.L.

THE EFFECT OF HYPOGLYCAEMIA ON THE METABOLISM OF THE BRAIN

By H. E. Himwich and J. F. Fazekas. *Endocrin.; November*, 1937; *p.* 800.

The brain is unique among organs in that its energy is derived almost exclusively from carbohydrate, as evidenced by an R.Q. of 1.0. Moreover the brain contains very little store of carbohydrate so that it is extremely dependent on the level of the sugar in the blood reaching it and one would expect it to be particularly susceptible to hypoglycaemia.

Experiments were performed on fasting dogs, using protamine zinc insulin to produce the hypoglycaemia, and determinations were made on blood from the femoral artery, superior longitudinal sinus (cerebral blood) and femoral vein. Results were compared with the normal cerebral exchange in 16 controls.

The results may be tabulated as follows:

Conclusions:

Fall in blood sugar, especially below 22 mg.% causes a profound decrease in glucose utilization and oxygen consumption in the brain, while a similar decrease in glucose utilization in muscle with hypoglycaemia results in only a slight fall in oxygen consumption.

This confirms the fact that brain as opposed to muscle is extremely dependent on glucose for metabolism, and is very susceptible to hypoglycaemia, with probably profound effects on cerebral physiology.

D.H.C.

THE CHEMICAL ESTIMATION OF ASCORBIC ACID (VITAMIN C) IN URINE

By P. J. Drumm, H. Scarborough and C. P. Stewart; *Biochem. Journ., Oct.*, 1937. *p.* 1874.

Of recent years, the estimation of Ascorbic Acid content of urine quantitatively has been of great use in detecting a subscorbutic state, before actual signs of scurvy appear. However, the methods used have all depended on the reducing power of Ascorbic acid, and have all been nonspecific.

In the method outlined in this paper, an actual derivative of ascorbic acid was isolated from urine of a normal individual. from 12 litres of urine, 20 mg. of the pure 2:4—dinitrophenylhydrazine derivative of dihydroascorbic acid were isolated and identified, thus establishing the normal excretion of Vitamin C in urine.

D.H.C.

A STUDY OF THE FREE SUGAR CONCENTRATION OF THE LIVERS OF RATS ABSORBING GLUCOSE AND FRUCTOSE AND ITS RELATIONSHIP TO GLYCOGEN SYNTHESIS

By J. P. Fletcher and E. T. Waters; *Biochem. Journ. Oct.*, 1937, *p.* 1830.

Cori had shown in 1926 that previously fasted rats when fed fructose deposited more liver glycogen than those fed glucose despite the fact that fructose was absorbed from the intestine at less than half the rate, and the blood sugar was lower in the fructose fed animals. In this experiment, rats were starved 24 hrs., and then were fed glucose or fructose by stomach tube. Estimations were made on blood sugar, liver sugar, liver glycogen, and fructose content of blood and liver. Rate of absorption was also determined. The effect of small amounts of insulin was studied.

The results were as follows:

1. Absorption coefficient of glucose was 250 mg.% per hr. and of fructose 160 mg.% per hr.
2. It has been confirmed that fructose is a better hepatic glycogen precursor than glucose.
3. Very small amounts of insulin, having no effect on synthesis of liver glycogen in rats absorbing glucose, often markedly inhibited this synthesis in animals absorbing fructose.

D.H.C.

Book Review

A METHOD OF ANATOMY

By Prof. J. C. B. Grant.

Far divorced from one's former conception of an anatomy text this book might better be entitled, "A *New* Method of Anatomy." It is not an exhaustive treatise, exhausting neither the subject nor the reader, but a volume embracing the fundamentals and their explanations. Written in crystal language it endows anatomy with that spirit of enjoyment heretofore so sadly lacking in the case of the average student.

Essentially regional in character, it follows the lead of classical descriptive artists in grouping the objects around a central or outstanding feature. Having once seen the picture you read on and find unfolded for you the answer to the ever present "why." Hence the work includes both embryological and functional anatomy. The distinction between action and function is fitly illustrated in the case of the subscapularis and related muscles.

Much of the forcefulness of the book lies in its illustrations. Their dramatic ability to impress on the student the one or two facts presented is a result of their simplicity. For example "Fig. 63" (page 60) illustrating lines of force through the metacarpal and carpal bones.

The reader will be impressed with the author's use of metaphors both in illustration and written word. I quote, "The upper limb is moored to the head, neck and trunk by muscles which may be likened to guy ropes." Again by diagram the gastro-intestinal tract, likened to the free edge of page 2 of a book, must always lie in front of pages 1 and 4, the genito-urinary tract. Coupled with this he derives benefit from many original observations present. They represent many thousands of cases and are an evidence of the remarkable anatomical background of the author.

So the student comes to a new understanding of anatomy which could otherwise only have been garnered over a period of many years. He will be able to carry his anatomy to the bedside not as a load but as a living interest and to apply his knowledge from first principles and not as a memory test.

To try and value this gift in terms of money would be stupid but we nevertheless must be grateful to Prof. Grant for the privilege of reading and owning "A Method of Anatomy" at such reasonable cost.

F.P.D. (M.D.)

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